Manual

Web-Thermo-Hygrobarograph
Web-Thermo-Hygrobarograph PoE

US 1.11 12/2010

W&T

Type	10/100BaseT, 12-24V
Model	57612, 57613
Release	1.11 Dec 2010

W&T

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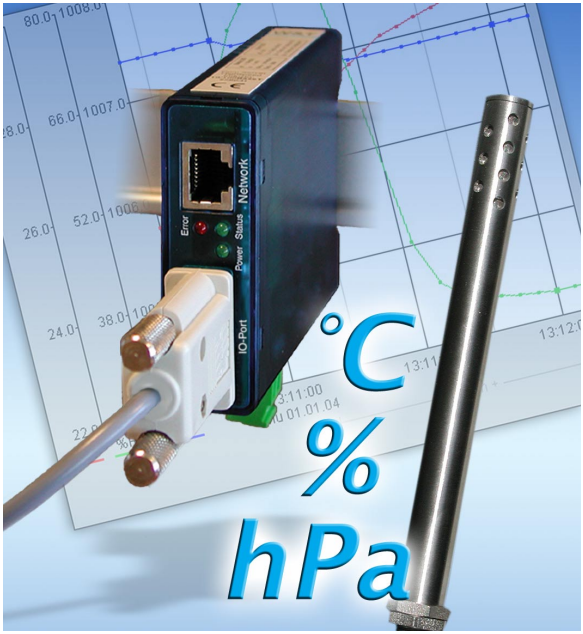
Introduction

The W&T Web-Thermo-Hygrobarograph includes all the functions in one box for measuring, storing and displaying your temperature and humidity data. Numerous alarm functions are also available which can be custom incorporated into your own applications or into existing systems.

This manual contains all the information you need to install, configure and operate the Web-Thermo-Hygrobarograph.



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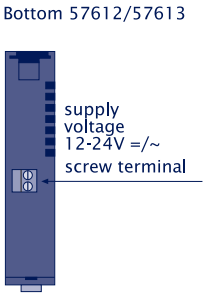
1 Quick-Start/Commissioning

Just a few steps are required to start up your W&T Web-Thermo-Hygrobarograph and to make it visible in your network.

1.1 Connecting the power supply 57612



Connect the AC adaptor provided to the terminal provided for the 12-24V AC/DC operating power. Polarity does not need to be observed.

1.2 PoE power supply 57613

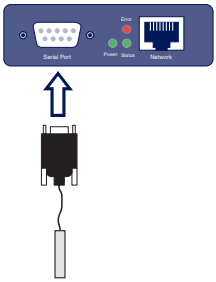
The Web-Thermo-Hygrobarograph PoE 57613 is designed for use in PoE (Power-over-Ethernet) environments in accordance with IEEE802.3af. Power is provided by the network infrastructure using the RJ45 terminal. The device supports both phantom power using data pairs 1/2 and 3/6 as well as power feed using the unused wire pairs 4/5 and 7/8.

To enable power management for the supplying components, the Web-Thermo-Hygrobarograph is identified as a Power Class 1 device with a power consumption of 0.44 to 3.84W.

As an alternative to PoE power supply, the Web-Thermo-Hygrobarograph PoE can also be powered by an external power supply connected to the screw terminals on the underside of the housing. DC voltage of any polarity as well as AC voltage may be used.

Use of the model Web-Thermo-Hygrobarograph PoE is also possible in networks without PoE power supply. In this case simply use an external power supply attached to the screw terminal as described above. No additional configurations or settings are necessary.

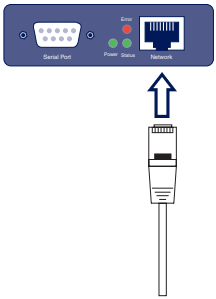
1.3 Connecting the temperature-humidity-air pressure sensor



Plug the sensor included in the scope of delivery into the 9-pin IO terminal on the unit.

1.4 Ethernet connection

The Web-Thermo-Hygrobarograph incorporates an IEEE 802.3-compatible network interface on a shielded RJ45 connector. The pin assignments correspond to an MDI port, so that the connection to the hub or switch is accomplished using a 1:1 shielded patch cable.



Power-over-Ethernet
The Web-Thermo-Hygrobarograph PoE 57613 can obtain power as defined in IEEE802.3af/Power-over-Ethernet. Either the data pairs or the unused wire pairs in 10/100BaseT may be used (see also the section *PoE power supply 57613*).

1.5 Assigning the IP address using „WuTility“

Once the hardware has been connected to the supply voltage as described above, you must assign the IP address needed for operation in a TCP/IP network. You can obtain the correct value for this parameter from your system administrator.

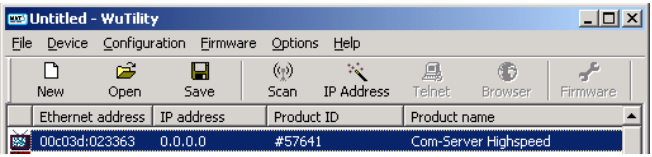
The IP address must be unique throughout the network.

There are various ways of assigning the IP address. To make it as convenient as possible, we have developed the „WuTility“ tool, which you can download from the WuT homepage at *http://www.wut.de*. This procedure is described in the following. A summary of the alternatives can be found in the Appendix to this manual under 7.1.

Be sure that the PC you are using to assign the IP address is located in the same sub-network as the module and that both the PC and the module are connected to the network.

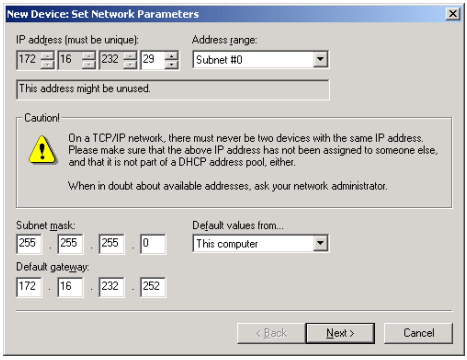
When it starts, *WuTility* automatically searches the local network for connected W&T network devices and generates an inventory list. This search process can be repeated manually as often as desired by clicking the *Scan* button:

Select from the displayed list your Web-Thermo-Hygrobarograph based on the MAC address:

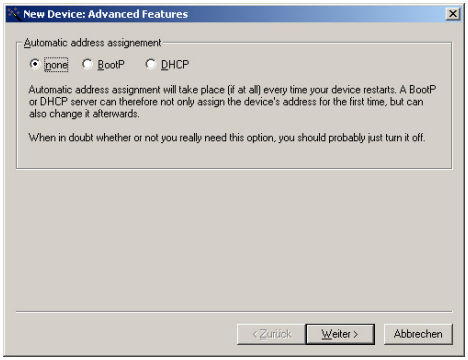


Click on the „IP address“ symbol:

In the resulting window enter the desired network parameters for the device and confirm by clicking on „Continue“.



The DHCP client of the Web-Thermo-Hygrobarograph can be activated in the following window.



Clicking on the *Continue* button assigns the network parameters to the Web-Thermo-Hygrobarograph. All the columns in the device list in WuTility are filled with information. After clicking on the globe in the WuTility menu list your standard browser is opened and you will see the start page for the device.

1.6 IP assignment using DHCP protocol

Many networks use DHCY (Dynamic Host Configuration Protocol) or its predecessor BOOTP described in the following section for centralized, dynamic assignment of network parameters. By default DHCP protocol is activated, so that in network environments with dynamic IP assignment you only need to connect the Web-Thermo-Hygrobarograph to the network. The following parameters can be assigned using DHCP:

- IP address
- Subnet mask
- Gateway address
- DNS server
- Lease time

To prevent undesired address assignment or address changes, we recommend deactivating DHCP, BOOTP and RARP unless these are expressly used in the respective network environment. Web-Thermo-Hygrobarographs with incorrectly assigned IP address can be conveniently found and reconfigured after the fact using the scan function of the WuTility management tool.

1.6.1 Activating/deactivating DHCP

By default DHCP is activated. The following methods are available for deactivating or later reactivating DHCP protocol.

- **Management tool WuTility**
  Select the desired Web-Thermo-Hygrobarograph from the device list and click on the *IP address* button. In the first dialog window enter the new network parameters and then click on *Next*.

In the following dialog window deactivate the options *BOOTP* and *DHCP*. Click on *Next* to send the new configuration data to the Web-Thermo-Hygrobarograph.

- **Serial interface**
  As part of serial IP assignment you can specify the following options for deactivating/activating the DHCP and BOOTP protocols directly following the address string:
  -**0** → Deactivates DHCP and BOOTP
  -**1** → Activates BOOTP/RARP
  -**2** → Activates DHCP
  A detailed description of this procedure can be found in the section *Alternative IP address assignment 7.1*

- **Web Based Management**

In *Config → Device → Basic Settings → Network* you can alternately activate or deactivate both the protocols. Detailed information about this can be found in section *Assigning the basic network parameters 1.5*.

1.6.2 System Name

To support any automated updating of the DNS system by the DHCP server, the Web-Thermo-Hygrobarograph identifies itself within the DHCP protocol with its system name. The factory setting for this is *WEBIO-* followed by the last three places of the Ethernet address. For example, the default system name of a Web-Thermo-Hygrobarograph having Ethernet address 00:c0:3d:01:02:03 is *WEBIO-010203*. The system name of the Web-Thermo-Hygrobarograph can be changed using Web Based Management.

1.6.3 Lease time

The lease time determined and sent by the DHCP server specifies how long the IP address will remain in use. After half the lease time has expired the Web-Thermo-Hygrobarograph attempts to extend the time for the assigning DHCP server and to update the address. If this is not possible by the time the lease time expires, for example because the DHCP server can no longer be reached, the Web-Thermo-Hygrobarograph deletes the IP address and starts a cyclical search for alternative DHCP servers in order to assign a new IP address.

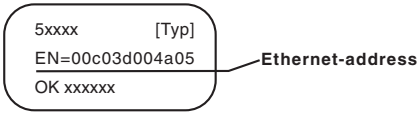
Because the clock is missing, the lease time associated with the current IP address is no longer available after a reset. Therefore, after the restart an update query is generated for the original DHCP server. If it is not available at this time, the Web-Thermo-Hygrobarograph deletes the IP address and starts a cyclical search for alternative DHCP servers.

If DHCP is activated, the remaining lease time together with the current IP address is shown in seconds in the menu branch *Home → Doc → Property.*

If after the assigned lease time has expired the DHCP server cannot be reached, the Web-Thermo-Hygrobarograph deletes its IP address. All existing TCP/UDP connections between the Web-Thermograph and other network clients are closed. To prevent disturbances of this kind, we recommend setting the lease time in the DHCP server to infinite.

1.6.4 Reserved IP addresses

The Web-Thermo-Hygrobarograph provides services which can make use of other clients in the network as needed. To open a connection they of course need the current IP address of the Web-Thermo-Hygrobarograph, so that in these applications it makes sense to reserve a particular IP address for the Web-Thermo-Hygrobarograph on the DHCP server. As a rule this is done by joining the IP address to the worldwide unique Ethernet address of the device, which can be found on the sticker on the housing.



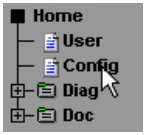
1.6.5 Dynamic IP addresses

Fully dynamic IP address assignment, in which the Web-Thermo-Hygrobarograph gets a different IP address after each restart or after the lease time has expired, is only useful in network environments with automatic cross-connection between the DHCP and DNS services. This means when a new IP address is assigned to the Web-Thermo-Hygrobarograph, the DHCP server then automatically updates the DNS system as well. The new address is assigned to the respective domain name. For detailed information about your network environment, consult your system administrator if in doubt.

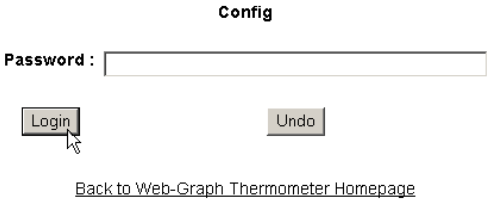
Dynamic, changing IP addresses can also be used for time server queries, sending of e-mails or other client applications in which the device itself searches for active connection to server services located in the network.

1.7 Assigning the basic network parameters

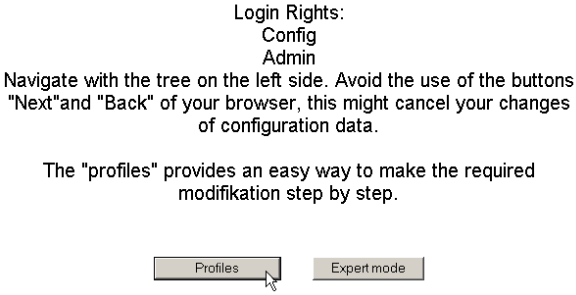
Select the menu item **„Config“** to the left in the configuration tree.



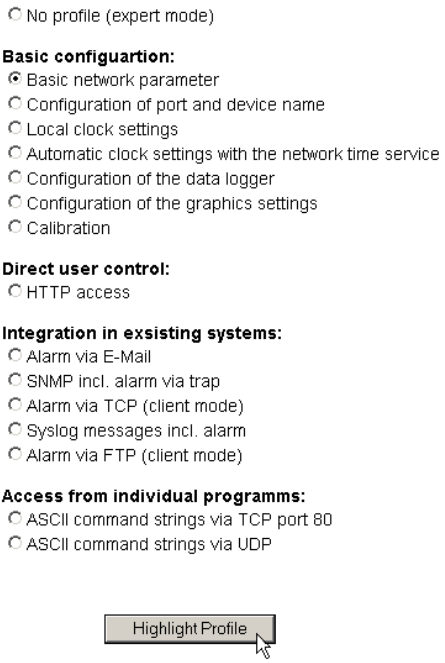
You are now prompted to enter a password. As shipped, the unit does not require a password, so that you can sinmply click on the Login button without entering a password.



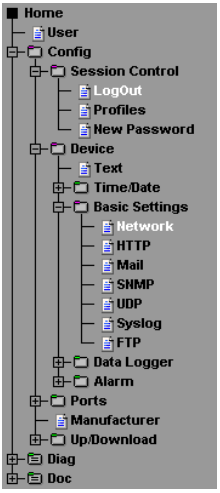
On the next screen use the profiles to select the configuration path.



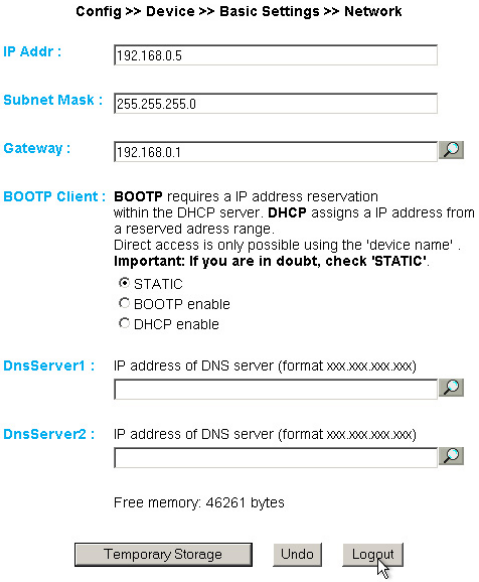
Select the „Basic network parameters“ profile and click on the „Highlight profile“ button.



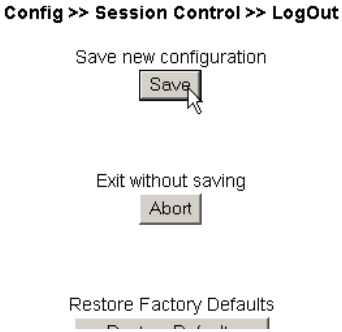
The device now automatically displays the necessary menu points for this profile. Click on „**Network**“ in the configuration menu.



In the following screen enter all the necessary network parameters and then click on the „Logout“ button.



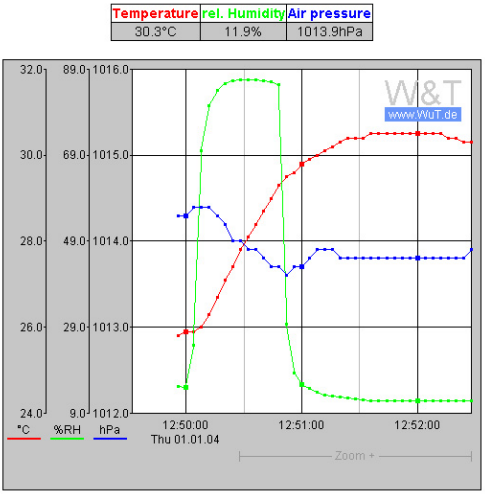
By then clicking on the „Save“ button, all your settings are saved in the device and you quit your configuration session. After the network parameters are changed, the unit automatically performs a restart.



The device is now ready to operate in your network. For easy handling, use the additional profiles for adapting the device to your needs.

2 Graph Display of the Measurements

2.1 Basic functions

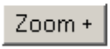


The device provides a table of the current values and a graph of the stored values.

By using the control buttons at the bottom of the page you can do the following.

Scroll the graph to right or left by the size of the display interval, to within one unit.

Scroll left or right in the graph in increments of one unit of the X-axis.



Zoom the area of the graph indicated at the lower right edge.

Zooms back to the previous zoom level.

Activates automatic refreshing of the graph.

Refreshes the display

Opens the configuration menu beneath the graph

Displays the values currently displayed in the graph in table form.

Value visualization:

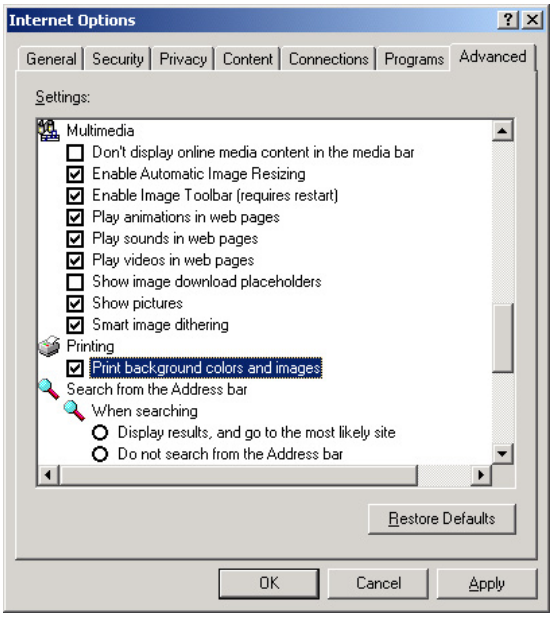
Large marker: This measured value is stored in the device data logger.

Small marker: This measured value is a volatile value which is used only for display but which is not stored in the data logger.

When exiting the zoom level, these measurements are lost. The connectinglines are only displayed in the zoom level which represents the memory.

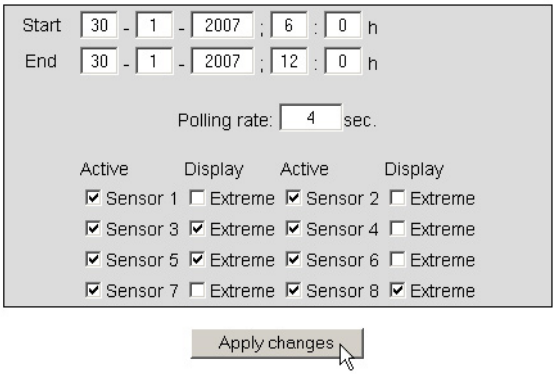
To print out the page containing the graph, it is necessary to activate printing of background colors and images in the Internet options. In Microsoft Internet Explorer this setting is found in

Tools -> Internet options -> Advanced



Design and positioning of the graph is configurable.

2.2 Config menu



The following functions are available from the configuration menu beneath the graph:

Start: Here you specify the starting time for the X-axis.

End: Here you specify the ending time for the X-axis.

Polling Rate: Enter here the desired refresh rate for the graph. The device provides a new value no sooner than after 4 seconds. Entering a value of less than 4 is not useful.

Active: Use this to turn the individual sensors on or off.

Display, Extreme: If a zoom level is selected in the graph in which a display point represents a measuring interval and not an individual measuring point, this function is used to display the maximum and minimum measured in this interval. If the zoom level is selected such that every measured value is displayed, this function has no effect. If the function is deactivated, the average value of the displayed interval is displayed.

Apply changes: Immediately applies the changes made for the graph.

2.3 Table

Report: Tue 30.01.07, 06:00:00 - Tue 30.01.07, 12:00:00

Date	Time		Sensor 1	Sensor 2
			°C	°C
Tue 30.01.07	07:21:49	Max	---	20.4
		Min	---	20.3
		Ø	---	20.4
Tue 30.01.07	07:30:00	Max	---	20.5
		Min	---	20.4
		Ø	---	20.5
Tue 30.01.07	07:38:11	Max	---	20.7
		Min	---	20.6
		Ø	---	20.6
Tue 30.01.07	07:46:22	Max	---	20.8
		Min	---	20.7
		Ø	---	20.7
Tue 30.01.07	07:54:33	Max	---	20.9
		Min	---	20.8
		Ø	---	20.9
Tue 30.01.07	08:02:44	Max	---	21.1
		Min	---	20.9
		Ø	---	21.0

This function is used to show the currently represented values in table format. As soon as not all stored values can be displayed, the following values are shown in the table for each sensor:

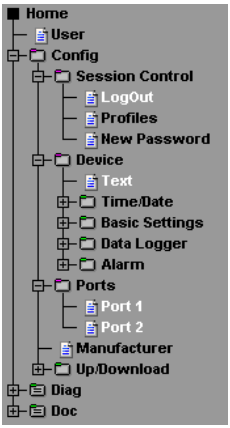
Max: The maximum value in the displayed interval

Min: The minimum value in the displayed interval

Ø: The average value of the displayed interval

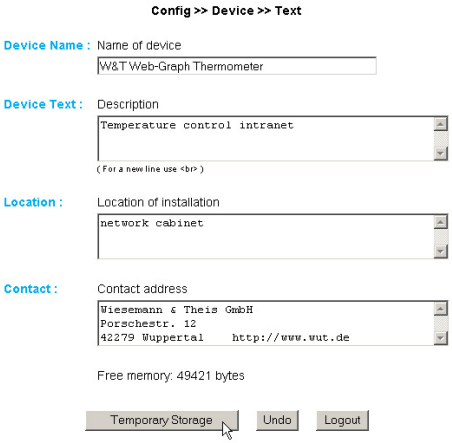
3 Additional basic settings

3.1 Configuring port and device name



3.1.1 Text

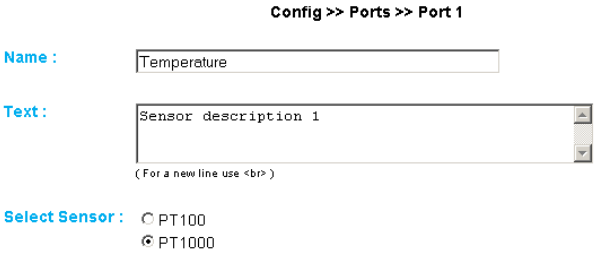
Enter your personalized names and designations in the screen provided and then click on the „Temporary Storage“ button.



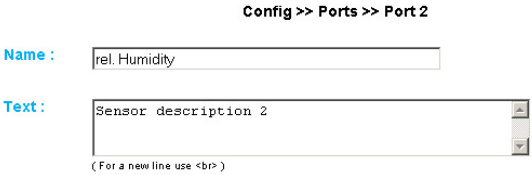
3.1.2 Ports

Enter here a name for the sensor and a descriptive text. Then click on „Logout“ and save your configuration.

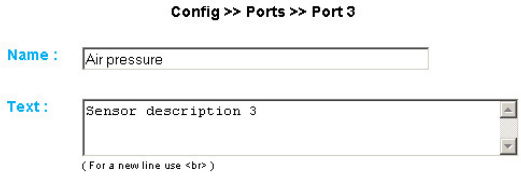
Port 1 (Temperature):



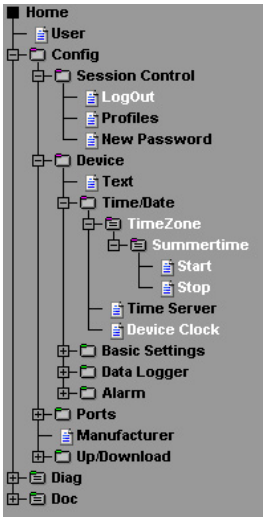
Port 2 (rel. Humidity):



Port 3 (Air pressure):

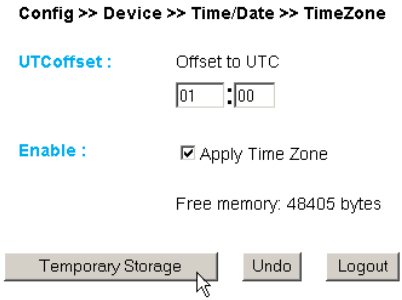


3.2 Setting local time



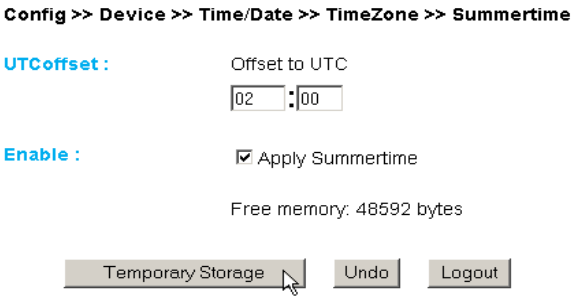
3.2.1 Timezone

Here is where you define the time zone where the device is located. The settings you make here are referenced to UTC (Coordinated Universal Time). Then click on the „Temporary Storage“ button.



3.2.2 Summertime

If you wish the device to automatically switch to summer time, first enter the offset to UTC. The standard value (for Germany) is two hours. Use „ „Apply Summer time“ to activate this function and save the settings.



Start/Stop

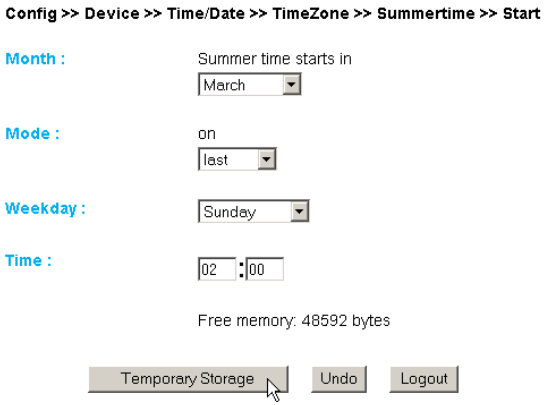
Define when summer time begins and ends. The parameters are already pre-configured:

Start:

Last Sunday in **March** at **02:00 hours**

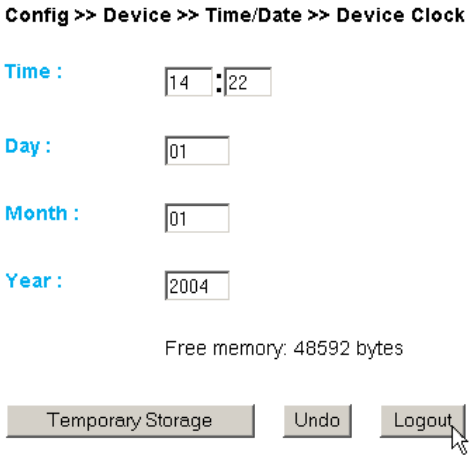
Stop:

Last Sunday in **October** at **03:00 hours**

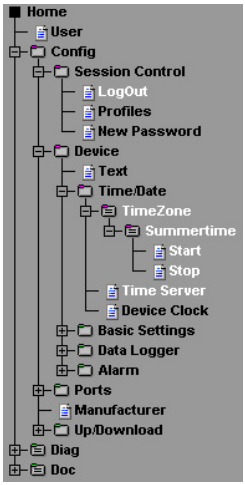


3.2.3 Device Clock

If you do not wish to use a time server, you can manually set the clock here. Then click on „Logout“ and save your settings.

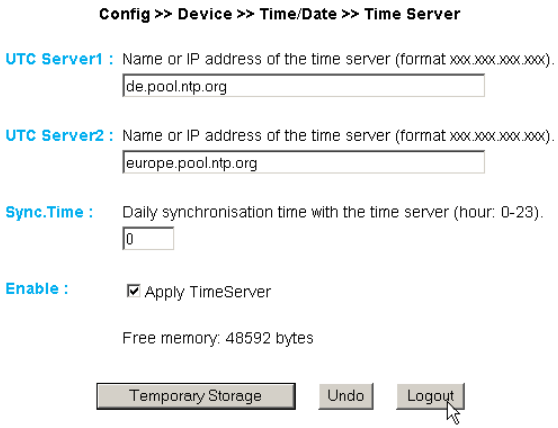


3.3 Automatic time setting using a network service



3.3.1 Time Server

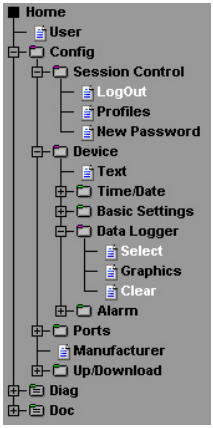
If you wish to have a time server adjust the time, enter the necessary information here. The default addresses are only an example and do not have to be used.



If you enter a name as the address, be sure that you have first configured the gateway and DNS server so that the device can resolve the addresses.

Click on the "Logout" button and save your settings.

3.4 Configuation of the the data logger

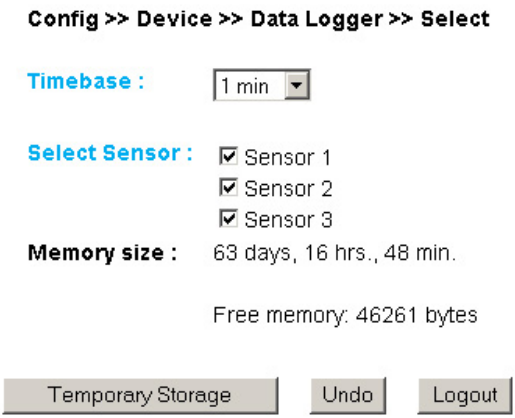


3.4.1 Select

Make the following settings:

Timebase: Defines at what time intervals the measured data are stored in the data logger. The device will in any case measure once a minute.

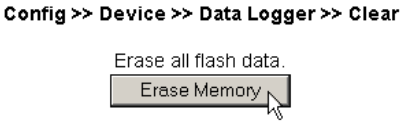
Select Sensor: The sensor selected here is used for saving the values in the data logger.



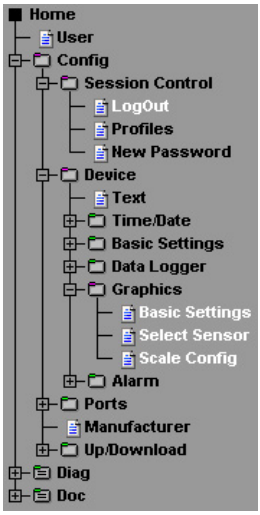
*Attention: If you change **Timebase** or **Select Sensor** the memory will be erased completely.*

3.4.2 Clear

Clicking on the „Clear memory“ button deletes the entire contents of the data logger.



3.5 Configuration of the graphics settings



3.5.1 Basic Settings

Config >> Device >> Graphics >> Basic Settings

Enable :

- ☑ Auto scroll enable
- ☑ Show table
- ☑ Show graph
- ☑ Show control buttons
- ☑ Show config menu
- ☑ Show Logo

Witdth : 500

Height : 450

Enable:

Auto scroll enable: After opening the graphical representation, the measured values are automatically refreshed. The control buttons are not available when using the Auto Scroll function.

Show table: Shows the current values in table format as well.

Show graph: Activates graph representation of the measured values.

Show control buttons: Shows the control buttons.

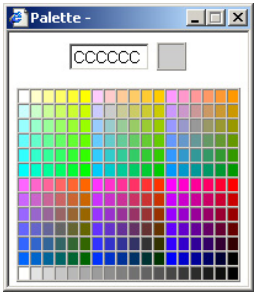
Show config menu: Shows the configuration menu for the graph representation below the control buttons.

Show Logo: Shows the W&T logo inside the graph.

Width: Enter here the desired width of the graph display.

Height: Enter here the desired height of the graph display

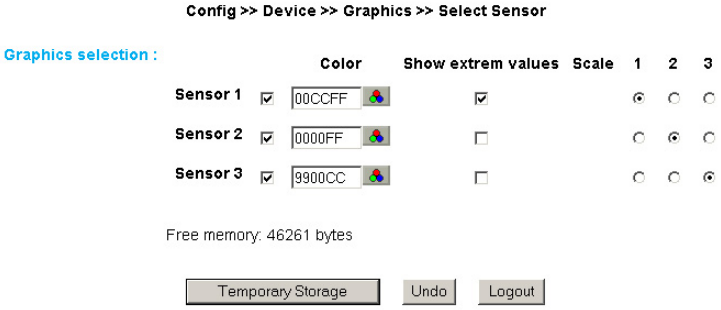
Frame Color: Enter here the desired color for the border of the graph, or select a color from the color selector below:



Background Color: Select here the color for the background of the graph. This color is also used as a background for the table.

Polling Rate: Enter here the desired refresh rate for the graph. The device provides a new value no sooner than after 4 seconds. Entering a value of less than 4 is not useful.

3.5.2 Select Sensor



Graphics Selection:

You can set the following parameters for each sensor:

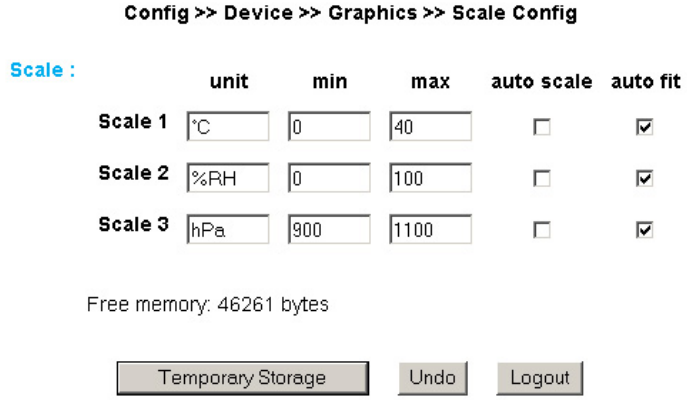
*Activate/deactivate Sensor **X**:* (Checkbox selected/deselected)

Sensor Color: Enter the desired sensor color, or use the color selector to choose.

Show extreme values: If a zoom level is selected in the graph in which a display point represents a measuring interval and not an individual measuring point, this function is used to display the maximum and minimum measured in this interval. If the zoom level is selected such that every measured value is displayed, this function has no effect. If the function is deactivated, the average value of the displayed interval is displayed.

Scale 1 2 ... x: For multi-channel devices you can show multiple Y-axes at the same time in the graph. These can be for example different temperature areas or measurands. Specify here which scale you want to assign the respective sensor to. For single-channel devices of course only one scale is available.

3.5.3 Scale Config



Scale:

The graph can display four different scales. Each individual scale can be assigned the following parameters:

unit: The unit used for this scale.

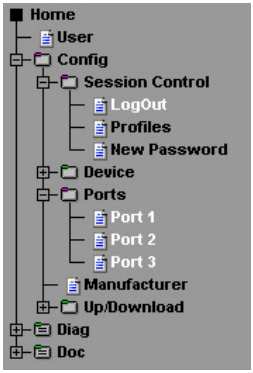
min: The lowest displayed value on this scale

max: The highest displayed value on this scale

auto scale: The lower and upper values for this scale are selected automatically based on the measured values, so that an optimal, dynamic display is achieved. If this function is activated, the existing parameters „min“ and „max“ are ignored.

auto fit: If this function is activated, the scale is corrected so that only whole-number values are shown on the display grid. *Auto fit* automatically activates the *auto scale* function.

3.6 Calibration



You can calibrate the sensor using single-point or two-point reference measurements and corresponding entry of offset values.

In single-point compensation the entered value is added to the measured temperature value, whereas two-point compensation calculates a straight line for compensating the entire measuring range. To remember calibration procedures, the user making the setting can add a comment.

Offset 1 :

Calibration **Optionally, 1-point or 2-point calibration can be chosen.**	
1 point compensation	Only Offset 1 is needed: this offset is added to every measured value.
2 point compensation	Offset 1 is the offset at temperature 1, Offset 2 is the offset at temperature 2. From these 2 offsets, a straight line will be interpolated, from which the offset for each measured value is calculated. The difference between the two temperatures entered here must be greater than 40° Celsius.
All values in °C in the form xx.xx .	

Temperature 1 :

Offset 2 :

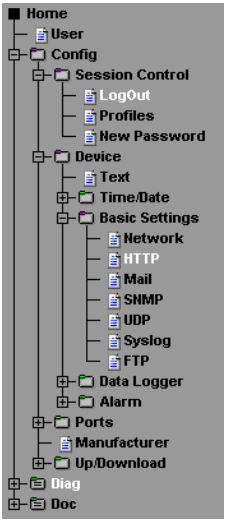
Temperature 2 :

Comment : Comments: date, name of operator, reference devices

Free memory: 46261 bytes

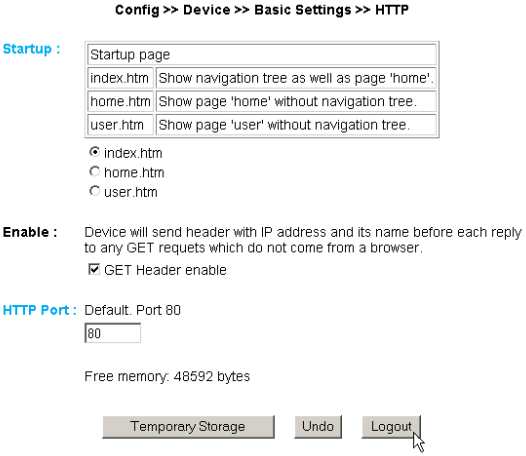
Temporary Storage | Undo | Logout

3.7 Browser access



3.7.1 HTTP access

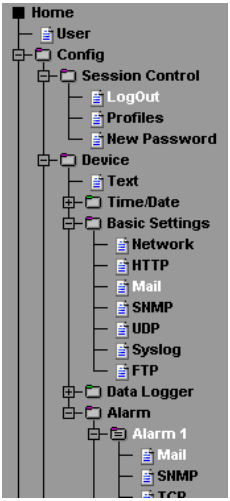
Startup: Specify here which HTML page you want to display when the device is started up.



HTTP Port: You can access the device through this port. The default is standard HTTP Port 80. If you want to use a different port, this may have to be explicitly named when the page is opened:

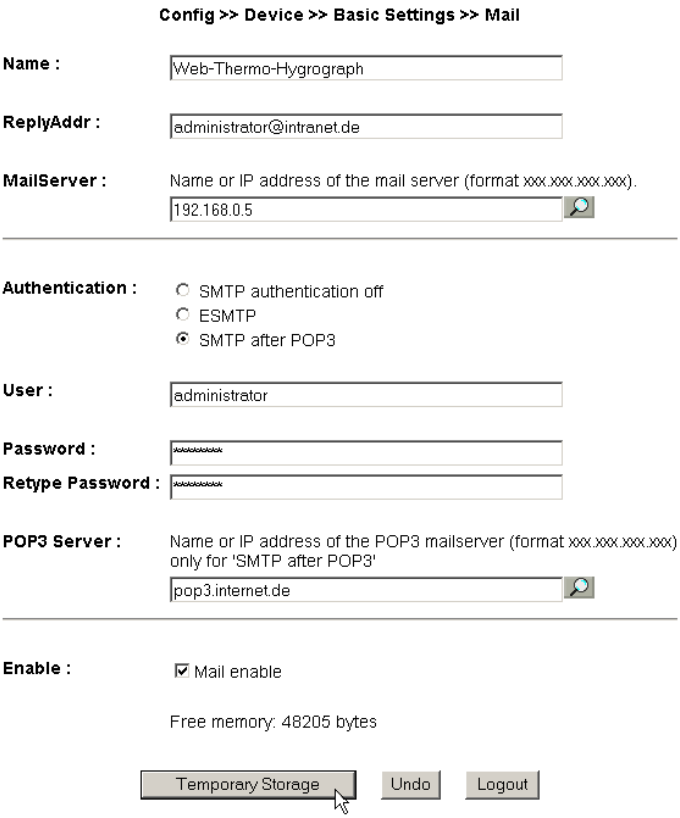
```
http://webgraph:<PortNr>
```

3.8 Alarm via E-Mail



3.8.1 Basic Settings -> Mail

Here is where you make the basic settings for e-mail sending of alarms.



The e-mail function allows you to send an information or alarm mail to one or more e-mail or SMS recipients.

Name: Enter the name you want to appear at the e-mail recipient.

ReplyAddr: The reply address with which the device is identified

MailServer: In the next step set the IP address of your mail server and its host name (for configured DNS servers) which you want the device to use. If the e-mail port is not the standard Port 25, you can append the port to the address with a colon:

```
mail.provider.de:476
```

Authentication: If a authentification for mail delivery is needed you can configure the user identification here:

SMTP authentication off: no authentication

ESMTP: a user-name and a password are needed to log in on the mail-server.

SMTP after POP3: for SMTP-sending a access to a POP3 server is necessary to identify the user. For this setting you also need to enter a valid POP3-server.

Enable: Be sure that the „Mail enable“ checkbox for sending e-mail is activated.

3.8.2 Alarm X

Here you configure the desired alarm conditions.

Config >> Device >> Alarm >> Alarm 1

Trigger :

- ☑ Sensor 1
- ☑ Sensor 2
- ☑ Timer
- ☐ Cold Start
- ☐ Warm Start
- ☐ Sensor lost

Temperature

Min : Limit in °C (form: xx.xx).
10

Max : Limit in °C (form: xx.xx).
45

Hysteresis : Hysteresis in °C (form: xx.xx).
5

Rate of change : Limit in °C/min (form: xx.xx, average over a period of 5 min).

Relative Humidity/Scalar

Min : Limit in % (form: xx).
10

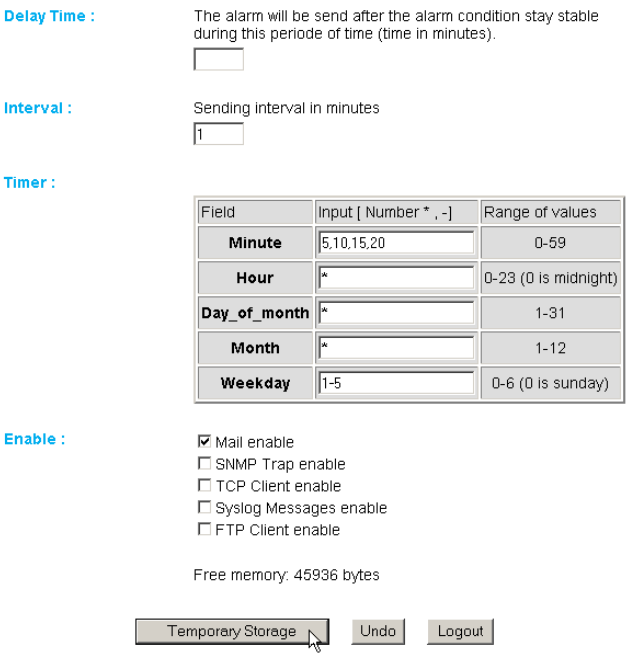
Max : Limit in % (form: xx).
90

Hysteresis : Hysteresis in % (form: xx.xx).
5

Absolute Humidity

Min : Limit in g/m^3 (form: xx.xx).
1

Max : Limit in g/m^3 (form: xx.xx).
25



Trigger: Here you define the trigger for the alarm e-mail. Multiple selections are possible.

To send a message without alarm status, activate the „Timer“ checkbox only.

Temperature:

Min./Max.: Specifies the lower and upper limits. The range within these limits is understood to be „valid“.

Hysteresis: You can also specify a hysteresis value which is used to reset the alarm status. This function prevents ‚flickering‘ around the limit value.

Rate of change: Maximum allowed temperature change within five minutes.

Example:

min. 10°C / max. 18°C / Hysteresis 2°C

When a limit is exceeded the alarm status is reset when 16°C (18-2) is reached or when the value falls below 12°C (10+2). If the temperature rises or falls by more than 2°C in five minutes the alarm is also triggered.

Relative Humidity/Scalar / Absolute Humidity:

The settings made here have exactly the same function as the temperature settings.

Delay Time: The alarm is triggered with a delay of this time (in minutes) to compensate for short-term limit value violations.

Interval: Enter here the send interval (in minutes) for sending a message when there is an active alarm. If you want to send just a single message, enter an „E“ here.

Timer: This timer interval is based on the CRON service such as is used in Linux/Unix systems. Valid characters are:

* : stands for all valid values in the respective input field (e.g. all minutes or all hours)

- : specifies a range of from ... to .. For example, weekday „2-4“ stands for Tuesday to Thursday, whereas entering a „*“ triggers the timer on all weekdays.

/ : Interval within the entered range , e.g. minute „0-45/2“ starts the timer in the range between the 0th and 45th minute every two minutes (0, 2, 4, 6 ,8, 10, ... , 44).

, : specifies an absolute value. For example minute 0, 15, 30 starts the timer on the hour, quarter-hour and half=hour.

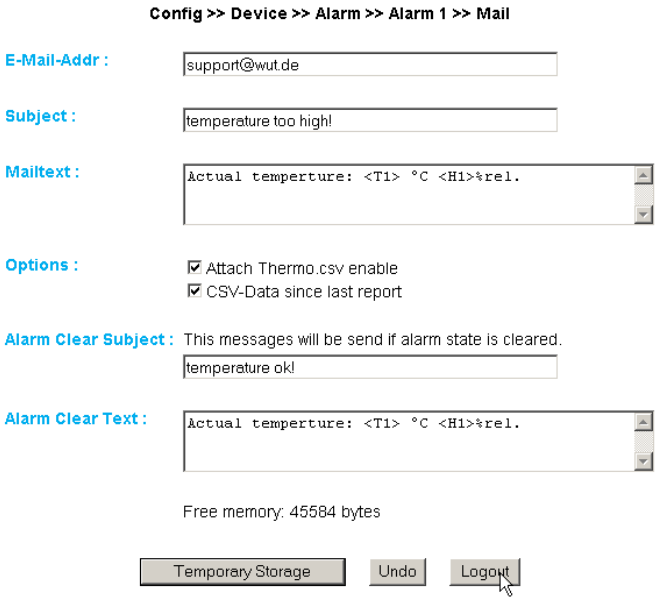
This function requires that the „Timer“ box be checked.

Enable: Select the type of message. FOr an e-mail alarm, check the „Mail enable“ box.

The values in the example would result in the following definition for the climatogram:

3.8.3 Alarm X -> Mail

The actual content of the e-mail is specified under this menu point.



E-Mail-Addr: Enter here the recipient's e-mail address. To send the e-mail to multiple recipients, separate the addresses using a semicolon.

Subject & Mailtext: Specify the subject line and the mail-text of the e-mail. In these text fields the following tags will be also accepted. The device exchanges these tags with the actual values.

W&T tag value		Function
comma spelling (##,#)	dot spelling (##.#)	
<T1>	<t1>	*Temperature:* Displays the current temperature.
<H1>	<h1>	*Humidity: Displays the current relative humidity.*
<AH>	<ah>	*Absolute humidity:* Displays the current absolute humidity.
<RC>	<rc>	*Rate of change:* Displays the rate of change from the last 5 minutes.
<PA>	<pa>	*Absolute air pressure:* Displays the current absolute air pressure.
<PN>	<pn>	*Sea-Level air pressure:* Displays the air pressure counted back to Mean Sea Level.
<AA>		*Alarm active:* Shows all alarms (numbers, komma separatet) which are currently active.
<AN>		*Alarm sensor number:*Shows all sensors (numbers, komma separated) which match with the configured alarm values per alarm.
<AS>		*Alarm sensor name:* see above, but with sensor names (komma separated)
<DN>		*Device Name: S*hows the device name.

W&T tag date + time	
<Z>	Displays the actual time and date as a string.
<$y>	*Year (####):* Displays the year.
<$m>	*Month (##):* Displays the month.
<$d>	*Day (##):* Displays the day.
<$h>	*Hour (##):* Displays the hour.
<$i>	*Minute (##):* Displays the minute.
<$s>	*Second (##):* Displays the second.

Attach thermo.csv enable: The „Attach thermo.csv enable“ option allows you to attach the complete contents of the data logger in semicolon-separated CVS format to the e-mail. The time base of the output corresponds to the data logger settings.

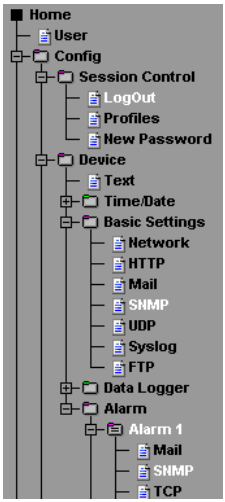
The file is generated dynamically in the device, so that when the logger content is large creation of the CSV file may take up to 30 seconds. During this time no other e-mail can be sent. Pending alarms are send directly after the mail with attachment is sent.

CSV-Data since last report: This option causes that only the data is written into the CSV file, which is measured since the last transmission interval.

This function only works properly if only the timer function is selected and no limit values are configured.

Alarm Clear Text: An Alarm Clear message is also sent when the temperature rises or drops to the valid range. Here you can use the same tags as for the alarm message.

3.9 SNMP incl. alarm via trap



Send alarm messages as an SNMP trap.

3.9.1 Basic Settings -> SNMP

Here you define the basic settings needed for SNMP operation.

Community String: Read: By using this string you can access temperature values in read mode in your SNMP manager.

Community String: Write: By using this string you can access temperature values.in both read and write mode in your SNMP manager.

Community String: Trap: This string is set within a SNMP-Trap

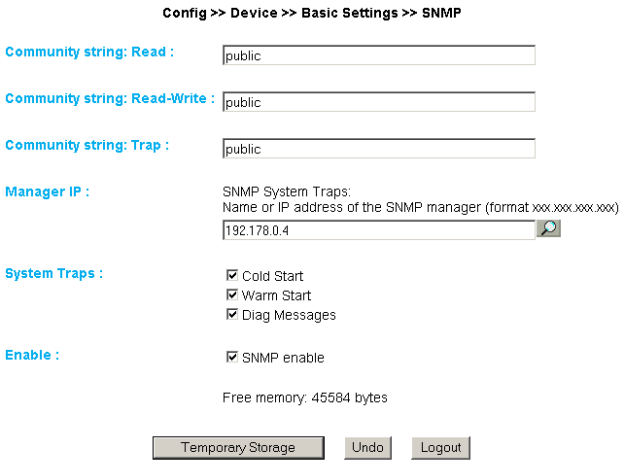
Manager IP: Contains the IP address of your SNMP manager. The device sends the SNMP messages to this address.

System Traps: You can create two system traps.

Cold Start: When power fails or is disconnected

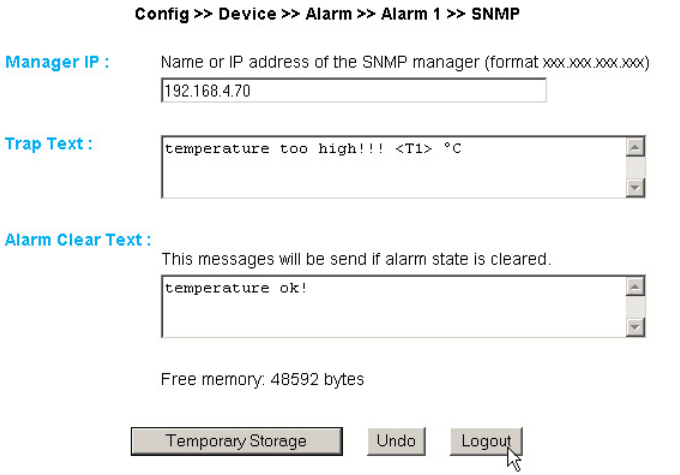
Warm Start: For device reset

SNMP Enable: Check this box to activate SNMP functionality.



3.9.2 Alarm X -> SNMP

The actual content of the SNMP trap is set under this menu point.



Manager IP: Contains the IP address of your SNMP manager. The device sends the SNMP messages to this address.

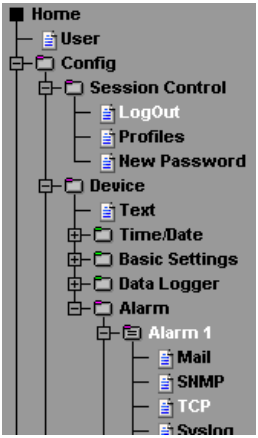
Trap Text: Specifies the text of the trap. In this text field the following tags will be also accepted. The device exchanges these tags with the actual values.

W&T tag value		Function
comma spelling (##,#)	dot spelling (##.#)	
<T1>	<t1>	*Temperature:* Displays the current temperature.
<H1>	<h1>	*Humidity: Displays the current relative humidity.*
<AH>	<ah>	*Absolute humidity:* Displays the current absolute humidity.
<RC>	<rc>	*Rate of change:* Displays the rate of change from the last 5 minutes.
<PA>	<pa>	*Absolute air pressure:* Displays the current absolute air pressure.
<PN>	<pn>	*Sea-Level air pressure:* Displays the air pressure counted back to Mean Sea Level.
<AA>		*Alarm active:* Shows all alarms (numbers, komma separatet) which are currently active.
<AN>		*Alarm sensor number:* Shows all sensors (numbers, komma separated) which match with the configured alarm values per alarm.
<AS>		*Alarm sensor name:* see above, but with sensor names (komma separated)
<DN>		*Device Name:* Shows the device name.

W&T tag date + time	
<Z>	Displays the actual time and date as a string.
<$y>	*Year (####):* Displays the year.
<$m>	*Month (##):* Displays the month.
<$d>	*Day (##):* Displays the day.
<$h>	*Hour (##):* Displays the hour.
<$i>	*Minute (##):* Displays the minute.
<$s>	*Second (##):* Displays the second.

Alarm Clear Text: An Alarm Clear message is also sent when the temperature rises or drops to the valid range. Here you can use the same tags as for the alarm message.

3.10 Alarm via TCP (client mode)



Send the alarm messages as a TCP packet.

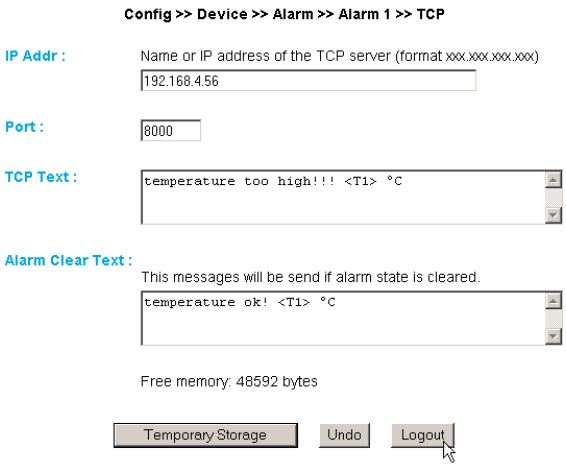
3.10.1 Alarm X -> TCP:

IP Addr: The IP address to which you want to send the message.

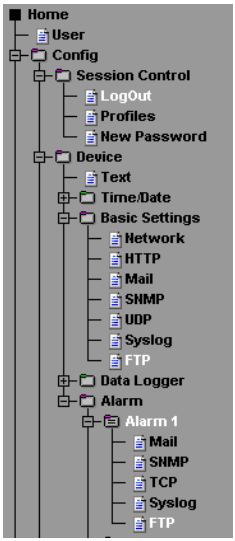
Port: The recipient must have a TCP server service on this port which can pick up incoming connections.

TCP Text: The text corresponds to the same specifications which apply to the other message types.

Alarm Clear Text: see above



3.11 Sending alarms via FTP (Client Mode)



Write temperature values directly to an FTP server.

3.11.1 Basic Settings -> FTP

Here you will find the basic settings needed for FTP mode

FTP Server IP: Enter here the IP address or the host name of the FTP server you want to send the data to.

FTP Control Port: This is the port needed for the connection. The standard port for FTP access is 21. This port is already preset and should function on most systems at the first go. If you require a different port, please consult your network administrator.

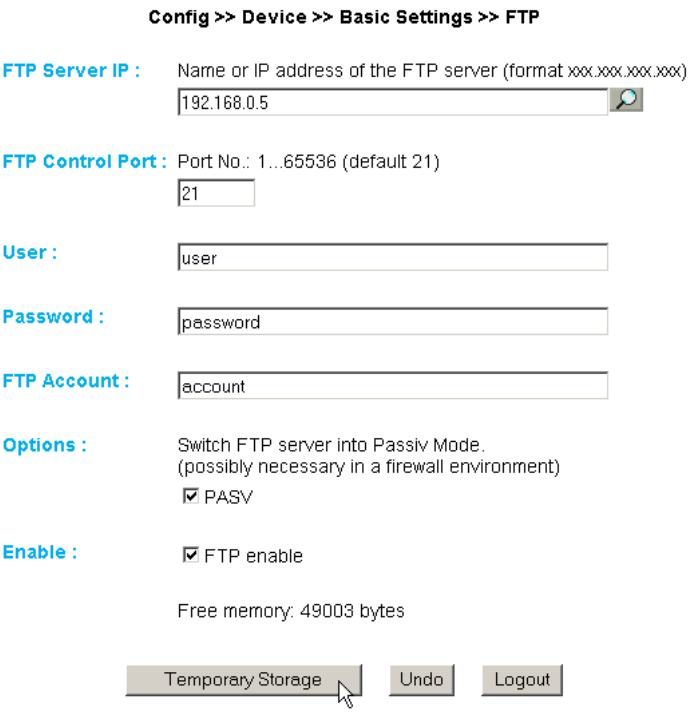
User: Enter here the user name required for the FTP access.

Password: This is the password assigned to the user.

FTP Account: Some FTP servers require a special Account entry for the login. If this is the case with your server, enter the Account name here.

Options / PASV: If this option is enabled, the server is instructed to operate in passive mode. This means the data connection is opened by the Web-Thermograph. If this option is disabled, the FTP server takes over opening of the data connection. If the server is protected by a firewall, it is recommended that the PASV option be enabled, since otherwise connection attempts could be blocked.

Enable: To use the FTP functionality, check this box.



3.11.2 Alarm X -> FTP

FTP Local Data Port: This is the local data port on the Web-Thermograph. Values between 1 and 65536 are valid. Entering „AUTO“ causes the device to select the port dynamically.

File Name: Enter here the path to the file which the device should access. You can use the same tags as in the FTP Alarm Text:

FTP Alarm Text: Specifies the text of the ftp content. In this text field the following tags will be also accepted. The device exchanges these tags with the actual values.

W&T tag value		Function
comma spelling (##,#)	dot spelling (##.#)	
<T1>	<t1>	*Temperature:* Displays the current temperature.
<H1>	<h1>	*Humidity: Displays the current relative humidity.*
<AH>	<ah>	*Absolute humidity:* Displays the current absolute humidity.
<RC>	<rc>	*Rate of change:* Displays the rate of change from the last 5 minutes.
<PA>	<pa>	*Absolute air pressure:* Displays the current absolute air pressure.
<PN>	<pn>	*Sea-Level air pressure:* Displays the air pressure counted back to Mean Sea Level.
<AA>		*Alarm active:* Shows all alarms (numbers, komma separatet) which are currently active.
<AN>		*Alarm sensor number:*Shows all sensors (numbers, komma separated) which match with the configured alarm values per alarm.
<AS>		*Alarm sensor name:* see above, but with sensor names (komma separated)
<DN>		*Device Name: S*hows the device name.

W&T tag date + time	
<Z>	Displays the actual time and date as a string.
<$y>	*Year (####):* Displays the year.
<$m>	*Month (##):* Displays the month.
<$d>	*Day (##):* Displays the day.
<$h>	*Hour (##):* Displays the hour.
<$i>	*Minute (##):* Displays the minute.
<$s>	*Second (##):* Displays the second.

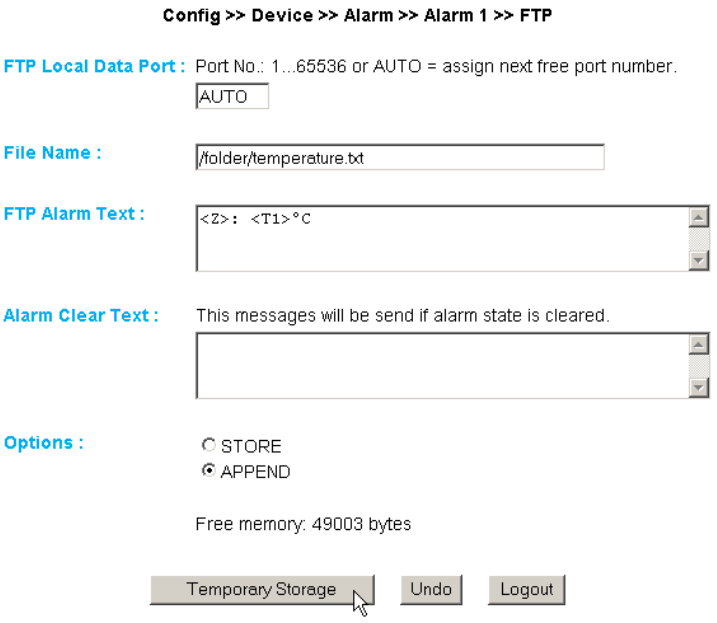
If you want a line break after each data transmission, enter a CRLF by prssing the RETURN key at the end of the line.

Alarm Clear Text: This message is sent after the alarm state is ended. The same tags as described above may be used.

Options:

STORE: Creates a file and writes the data to it. If this file already exists, it is overwritten.

APPEND: Appends the data to an existing file. If the file does not yet exist, it is created.



3.12 Syslog messages incl. alarm

IP Addr: The IP address you want to send the message to.

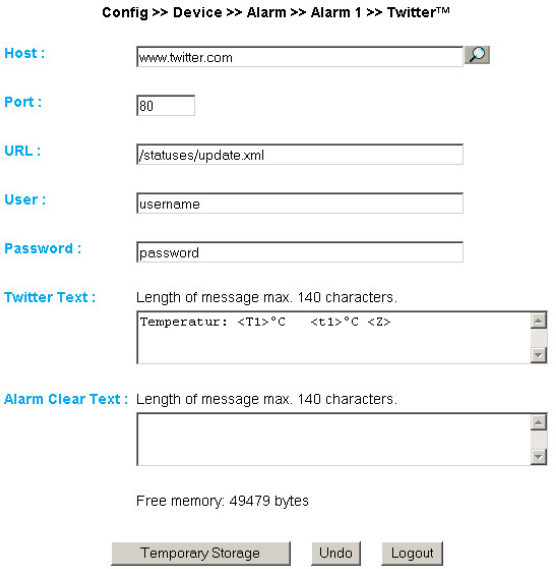
Port: On this port the receiver must have a Syslog service installed which can pick up the incoming connections. (Standard: 514)

Syslog Text: The text corresponds to the same specifications as apply to the other message types.

Alarm Clear Text: see above

3.13 Twitter ™

With this function you are able to store the measured values directly to a twitter account.



Host: Name or IP address of the host to which the connection should be established. For the use with Twitter the preadjustment *www.twitter.com* is needed.

Port: For the use with Twitter the preadjustment of Port *80* is needed.

URL: For the use with Twitter the preadjustment *statuses/update.xml* is needed.

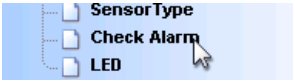
User: Your Twitter username

Password: Your Twitter password

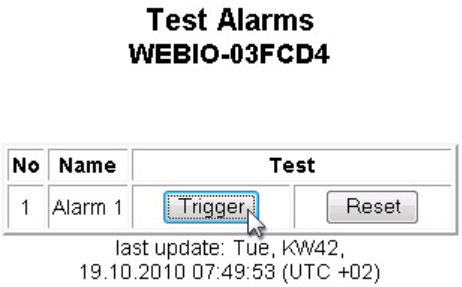
Twitter Text: The text conforms to the same specifications as apply the other message types.

Alarm Clear Text: see above

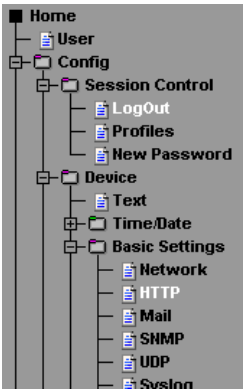
3.14 Check Alarm



On this configuration page you can test the alarms you set. Clicking on the „Trigger“ button for the respective alarm simuloates the presence of an alarm, so that the configured actions can be performed accordingly. Clicking on the „Reset“ button restores the alarm status to normal state.

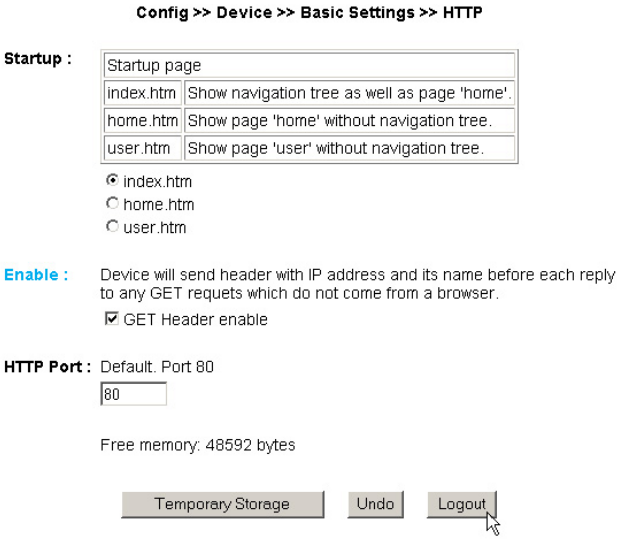


3.15 ASCII command strings via TCP Port 80

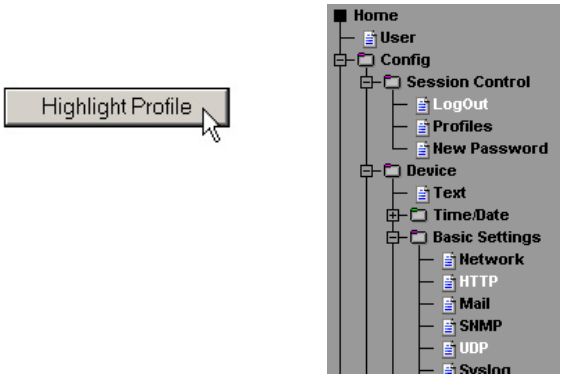


3.15.1 HTTP

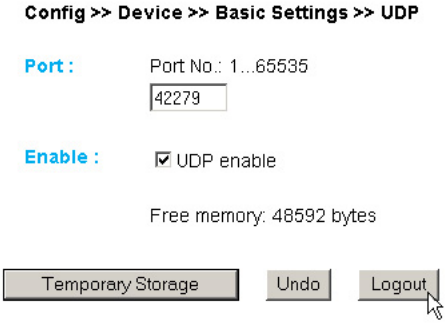
When queried by means of an HTTP-Get command, the device can also send a header with IP address and device name in addition to the temperature. To do this, check the appropriate box. Only the temperature is sent if this function is deactivated.



3.16 ASCII command strings via UDP

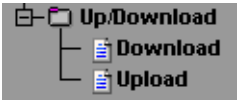


In addition to TCP/IP comands, the device can also reply to UDP datagrams. For this you must set the port you want the device to „listen“ to. The default setting is 42279. The enable function activates UDP.



The setting of the header which can be appended to the temperature in messages applies here as well.

3.17 UP-/Download



In the download area you can download the XML configuration as well as the three user pages (home.htm, user.htm, log.htm) for further processing.

With **XML**-Download you can read out the settings of the Web-Thermo-Hygrograph and make any modifications, and **XML Upload** allows you to store the settings again in the device.

With some Web browsers the correct code is only output using the path „View-> Display (Frame-) Source text“ after the „XML Download“ button has been clicked.

For XML upload you create or modify a text file with the corresponding parameters and load this file into the device. The configuration of the 8x Thermometer must beging with the expression

```
<io-ANTFB1.3>
```

and end with the expression

```
</io-ANTFB1.3>
```

The sequence of the parameters you set corresponds to the sequence of the configuration menu starting at „Device“.

The syntax for configuring via XML is as follows:

```
<option>
    <parameter1> VALUE </parameter1>
    <parameter2> VALUE </parameter2>
</option>
```

The individual options and parameters correspond to the configuration items in the browser menu.

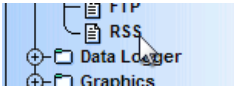
Please note, especially in the case of mass updates and configurations, that the IP address stored in the XML file is also sent, which only needs has to be adapted.

In addition, you can exchange the user pages (user.htm, home.htm, log.htm) in the **Upload** area.

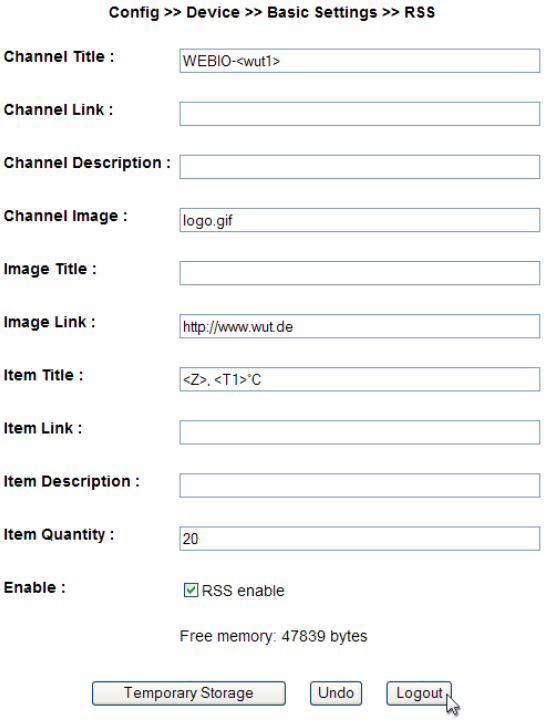
An example can be found in the Appendix (6.2).

Use the menu point„**Upload -> GIF“** to replace the logo displayed in the menu and store it directly in the device.

3.18 RSS-Feed



The device supplies a RSS feed, which can be subscribed by feed readers. The configuration can be found under Basic Settings >> RSS..



Channel Title: Headline, which will be be indicated within the feed.

Cannel Link: This link will be called after a clicking the title.

Channel Description: Optional, additional information about the content of the feed.

Channel Image: Path to an image, which will be shown within the feed.

Image Title: Optional title for the image.

Image Link: This link will be called after a clicking the image.

Item Title: Headline for the seperate items.

Item Link: This link will be called after a clicking the item.

Item Description: Optional, additional information about the content of the item.

Item Quantity: Quantity of displayed items within the feed. These items are always the last available saved values.

In all textboxes the following tags can be used to display the measured values:

<T1> shows the temperature value.

<Z> shows the time and date information.

<H1> shows the humidity value.

<PN> shows the air pressure value.

and all W&T-tags for date und time:

<$d>**, **<$m>, **<$y>**, **<$h>** , **<$i>**, **<$s>**

4 Single querying of temperatures

4.1 Querying temperature via TCP/IP

It is possible to use a socket connection to manually query the current temperature values in CSV (comma-delineated data). This function is also used to query the individual data without the Web interface.

To do this, send the following string to Port 80:

```
GET /Thermo.csv
```

This expression may also be given additional parameters that determine the content:

```
start=ttmmyyyyThhmmss
```

Start date and time of the desired values.

```
end=ttmmyyyyThhmmss
```

End date and time of the desired values.

```
DTb=x&
```

Desired interval where **x** =

```
1   ->  1 min.
2   ->  5 min.
3   ->  15 min.
4   ->  60 min.
```

The expression must begin with „?“ after the filename. Each variable must be separated with a „&“ .

Example:

```
http://<ip-address>/thermo.csv?start=01012010T123000&end=30032010T200000&DTb=3&
```

This expression generates a CSV file containing the data from 01.01.2010, 12:30h up to 30.03.2010, 20:00h in 15 minute intervals.

To query the individual, current temperature value, send the string:

```
GET /Single1
```

To query the individual, current rel. humidity value, send the string:

```
GET /Single2
```

To query the individual, current air pressure value, send the string:

```
GET /Single3
```

4.2 Temperature querying via UDP

Open a UDP connection to the device IP address or to the Net-ID as a broadcast and Port 42279 (default setting can be changed).

Send the device one of the GET /Single expressions given under 4.1 and the device will return the value to the port you are using.

When using multiple devices, it may be practical for broadcast transmissions to include the name and IP address of the device as well. To do this, activate „GET Header enable“ under „Config >> Device >> Basic Settings >> HTTP“.

4.3 Temperature querying using SNMP

The sensor can be queried directly using SNMP-Get requests. They reach the sensor via the following path:

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.3.1.1.**1** = temperature with one decimal place and comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.4.1.1.**1** = temperature as 3 digit integer value, without conmma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.8.1.1.**1** = temperature with one decimal place and dot separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.3.1.1.**2** = relative humidity with one decimal place and comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.4.1.1.**2** = relative humidity as a 3-digit integer value, without comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.8.1.1.**2** = relative humidity with one decimal place and dot separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.3.1.1.**3** = air pressure with one decimal place and comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.4.1.1.**3** = air pressure as a 5-digit integer value, without comma separation.

<IP-address> 1.3.6.1.4.1.5040.1.2.**16**.1.8.1.1.**3** = air pressure with one decimal place and dot separation.

For querying, specify the configured SNMP Read or Read/Write community.

An MIB for incorporation into management applications can be downloaded from the data sheeet page for the device at the WuT homepage http://www.wut.de.

If you want to make changes in the device via SNMP (IP address, subnet mask, etc.) you must first start a session on the device using your SNMP manager.

Entering the administrator passwortd in the variable

```
wtWebGraphThermoBaroSessCntrlPassword
```

opens a session. By reading out the variable

```
wtWebGraphThermoBaroSessCntrlConfigMode
```

you can check whether the session was successfully opened.

1 = Session opened, device in configuration mode.
0 = Opening of the session failed. Check whether you entered the password incorrectly.

After successfully opening the session, you can use the variables defined in the private MIB to make any configuration changes.

Once you have finished with configuration, write the variable

```
wtWebGraphThermoBaroSessCntrlLogout
```

to close the session.

```
wtWebGraphThermoBaroSessCntrlLogout =
```

1 All changes are saved
2 Quit without saving

If no SNMP communication takes place over a period of 5 minutes during an open session, the device unilaterally ends the session and all changes are cancelled.

Opening an SNMP session has priority over an HTTP login. This means: A user with Config or Administrator rights loses his browser access as soon as an SNMP session is opened.

The description for the individual SNMP variables, OIDs etc. can be found in the Private-MIB.

5 Placing the temperature into your own web page

It is possible to use an implemented Java applet to integrate the temperature on your own Web page. The applet is refreshed every 60s. An example for this applet is already in the device:

```
http://172.0.0.10/app.htm
```

To incorporate the applet for temperature monitoring into the HTML page, the following HTMP tag must be inserted at the point where the applet will be incorporated:

```
<Applet Archive="A.jar" Code="A.class" Codebase="Http://WebTherm/"
Width="width" Height="height">
```

Now the following parameters may be optionally specified:

Background color:

```
<Param Name="BGColor" Value="#RGB-value">
```

Font color:

```
<Param Name="FGColor" Value="#RGB-value">
```

The RGB value is given as a 24-bit hex value. e.g.:Value="#2F3C09" This is not case-sensitive.

Specifying text alignment:

```
<Param Name="Align" Value="const">
```

const must be one of the following constants:

- Left
- Center
- Right

This is not case-sensitive.

If a parameter is omitted or incorrectly set, the following standard values are used

BGColor	#FFFFFF (white)
FGColor	#000000 (black)
Align	Right

The sensor is selected using the parameter

```
<Param Name="Sensor" VALUE="1">
```

The unit (for example for the humidity sensor) is specified by the parameter

```
<Param Name="unit" VALUE="% rel.">
```

The parameter is a string type. If it is not specified, a „C“ is automatically set.

If you want to use your own Java functions which access multiple device applets, you can use the parameter

```
<Param Name="device" VALUE="0">
```

to number the applets for each device begining with 0.

Turning polling of the sensors off and on is accomplished using the parameter

```
<Param Name="sensorpolling" VALUE="on">
```

or „off“. The default setting is „on“.

If you use a different polling rate than the default 60 seconds, use the parameter

```
<Param Name="pollingrate" VALUE="60000">
```

in units of ms. Note that no sooner than every 60 seconds for the Web-Thermograph and every 4 seconds for the Web-Thermograph 2x/8x a new value is available.

To output an error message when there are problems opening a connection, use the parameter

```
<Param Name="showerrors" VALUE="on">
```

or „off“ to turn this on or off. The default value is „off“.

Once all the parameters are defined, you must close the HTMP tag with </Applet>.

Example:

```
<Applet Archive="A.jar" CODE="A.class"
Codebase="http://192.168.0.10" Width="300" Height="100">
<Param Name="unit" VALUE="% rel.">
<Param Name="device" VALUE="0">
<Param Name="BGColor" Value="#0000FF">
<Param Name="FGColor" Value="#FF0000">
<Param Name="Align" Value="Center">
<Param Name="Sensor" Value="2">
</Applet>
```

The font size is automatically determined by the size of the applet.

5.1 Controlling the Java applet with JavaScript

To be able to use control of the Java applet with JavaScript, the addition „mayscript“ must be specified in invoking the applet:

```
<Applet Archive="A.jar" CODE="A.class"
Codebase="http://192.168.0.10" Width="300" Height="100"
mayscript>
```

In order to work with the applet the corresponding JavaScript function must be declared in the header of the Web page.

The following reading function is used for this:

```
function sensorChanged( iDevice, iSensor, iVal )
  { Program code run when there is a change on the inputs
```

The above function is invoked by the applet when a temperature change on the sensors is detected. *iDevice* specifies for which Web-Thermograph a value changed. *iSensor* is used to indicate which sensor changed. The variable *iVal* transmits the current temperature value.

Please note that the names of the functions are case-sensitive

The following source text shows a small example for dynamic display of Sensor 1.

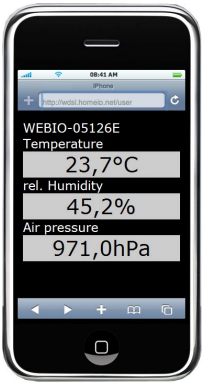
```
<html>
<head>
<script language="JavaScript" type="text/javascript">
           function Temp (iVal, iSensor)
           {
            document.getElementById('temptab').firstChild.data = iVal+'°C';
            }

           function sensorChanged( iDevice, iSensor, iVal )
           {
           Temp (iVal, iSensor);
           }
</script>
</head>
<body style="background-color: #79ACDF;
font-family: Arial, Helvetica, sans-serif;">

<div align="center"><noscript> JavaScript is not activated
or not supported </noscript>

  <p><applet name="Analog" archive="A.jar" code="A.class"
    codebase="http://192.168.0.5" height="0" width="0" mayscript>
```

```
      <param name="device" value="0">
      <param name="showerrors" value="off">
      <param name="sensorpolling" value="on">
      <param name="pollingrate" value="4000">
      Java is not activated or is not supported
    </applet></p>

    <table width="200" cellspacing="0" cellpadding="0" bordercolor="#FFFFFF"
align="center">
    <tr bgcolor="#CCCCCC">
      <td id="temptab" align="center">0</td>
    </tr>
    <tr bgcolor="#999999">
      <td>
        <div align="center"><font size="2" color="#FFFFFF">Sensor 1</font></div>
      </td>
    </tr>
  </table>
</div>
</body>
</html>
```

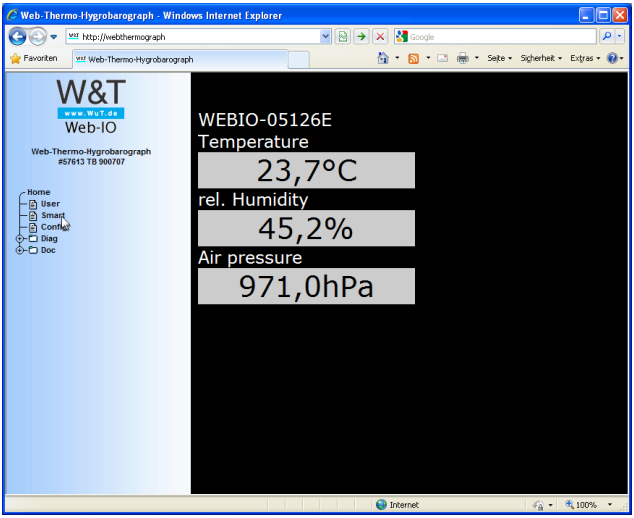
A more complete example for use of the Java applet is on the Web page app.htm, which can be opened in the Web-IO.

Open: http://<IP-Address>/app.htm

6 Display of measured values on smartphones



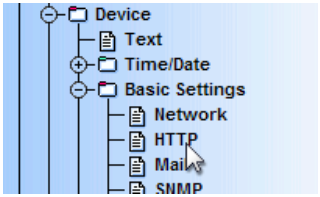
In order to view the values comfortably on mobile phones and smartphones, the device has a preconfigured web page that is adjusted to the specific proportions. This can be directly accessed from the configuration menu via the entry „Smart“.

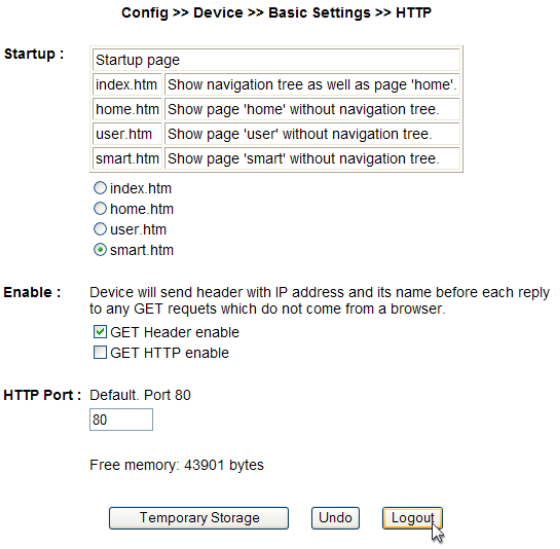


The right frame now shows the system name of the device. The names of the available sensors are displayed, including their values.

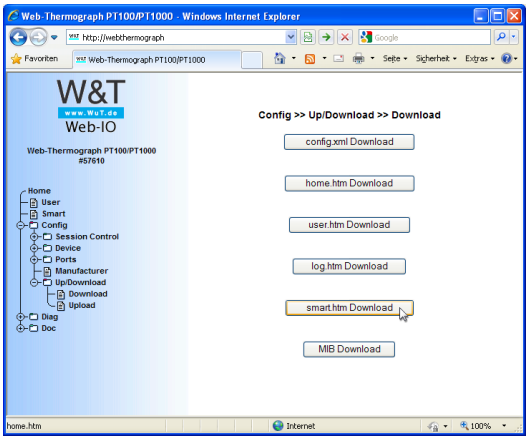
The page can be accessed directly through the browser via http://<ip-address>/smart.htm. With this call, the page will be displayed without the configuration menu.

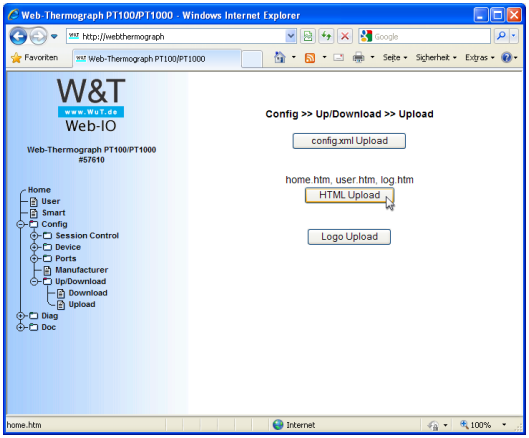
The page smart.htm can be set as startup page. To do this, configure it in Config -> Device -> Basic Settings ->HTTP.





The page smart.htm can also be customized to your needs by selecting it via the menu Config -> Up / Download -> Download, editing it and uploading it back into the device via Config -> Up / Download -> Upload.





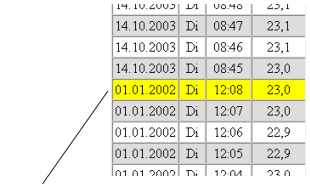
7 Data logger

The Web-Thermo-Hygrobarograph stores all the measured values in a non-volatile ring memory, so that they are retained even after loss of power or actuating the reset button.

The measured data in the data logger are recalled through the user page of the device (Home -> User or http://xxx.xxx.xxx.xxx/user.htm).

Under *Config -> Device -> Data Logger -> Memory* you can clear the memory.

An interruption of the timeline, caused for example by a reset or subsequent time server synchronization, is shown on the data logger page as a yellow line.



14.10.2003	Di	08:47	23,1
14.10.2003	Di	08:46	23,1
14.10.2003	Di	08:45	23,0
01.01.2002	Di	12:08	23,0
01.01.2002	Di	12:07	23,0
01.01.2002	Di	12:06	22,9
01.01.2002	Di	12:05	22,9

time line interruption:
yellow marked line

When alarm limit values are set, temperatures which are not within the valid range are highlighted in red.

8 Appendix

8.1 Alternate methods of assigning the IP address

8.1.1 Using DHCP-/BOOTP protocol

Many network use DHCP (Dynamic Host Configuration Protocol) or BOOTP for centralized and dynamic assigning of the IP addresses. For Web-Graph devices it makes no difference which of the two protocols is used, since DHCP is simply a downward-compatible extension of BOOTP. DHCP servers thus also make use of requests from BOOTP clients.

The following parameters can be assigned to the Web-Thermograph using these protocols:

- IP-Address
- Subnet-Mask
- Gateway-Address

It is not possible to transmit additional parameters or a lease time.

Function

To obtain an IP address, the device sends a corresponding BOOTP request as a broadcase to the network after each restart. The reply then generated by the DHCP/BOOTP server contains the IP address as well as the subnet mask and gateway address. The Web-Thermograph immediately stores this information in its non-volatile memory.

For starting up the device in DHCP/BOOTP networks, please consult with your system administrator. If the address is assigned using DHCP, you must also note that a reserved IP address is needed. To update the respective address database, the administrator will need the Ethernet address of the Web-Graph Thermometer, which can be found on the part label on the housing of the device.

After the necessary entries have been made, the device automatically gets the desired IP address after each reset. To ensure that the Web-Thermograph is also available should the DHCP/BOOTP server fail, the previous IP address is retained if a reply is not forthcoming.

In DHCP environments the IP address you assign must be reserved by means of a fixed link to the Ethernet-address of the Web-Thermograph. Under Windows NT his is done in the DHCP Manager under menu item „Reservations". Linux provides the file „dhcpd.conf" .

If this option will be changed in the web-configuration the system change will first be updated after a device reset.

8.1.2 ...Using ARP command

The prerequisite is a PC which is located in the same network segment as the Web-Thermograph and which has the TCP/IP protocol installed on it. Read the MAC address from the label on the device (e.g. EN=00C03D0012FF). Under Windows you first ping another network station and then use the command line described below to make a static entry in the ARP table of the computer:

```
arp -s <IP-Address> <MAC-Adresse>
```

e.g. under Windows:

```
arp -s 172.0.0.10 00-C0-3D-00-12-FF
```

e.g. under SCO UNIX:

```
arp -s 172.0.0.10 00:C0:3D:00:12:FF
```

Ping the device again (in our example ping 172.0.0.10). The IP address is now stored in non-volatile memory.

This method works only if no IP address has been assigned to the Web-Thermograph yet, which means the entry is 0.0.0.0. To change an already existing IP address hyou must open the configuration menu using your browser or use the serial method (see below).

8.1.3 ...Using the serial port

In contrast to the procedure described above, you can use the serial port to change an already existing IP address for the Web-Thermograph.

Connect the RS232 port on the device to a PC (null modem cable; in the case of the Web-Thermograph NTC/PT100 (57609/57610) only pins 2, 3 and 5 are connected) and start a terminal program (e.g. Hyperterminal). Create a direct connection in the program through your COM port and set the serial properties to *9600 baud, no parity, 8 bits, 1 stopbit, no protocol.* Perform a reset by disconnecting power while holding down the „x“ key until the reply *„IPno.+<Enter>“* appears. Now enter the IP address in dotted decimal notation (xxx.xxx.xxx.xxx) and finish your entry with *<Enter>*. You may also enter the subnet mask and gateway and turn off the BOOTP client directly if you use the following syntax after the input prompt (*IPno.+<Enter>*):

```
<IP-Address>,<subnetmask>,<gateway>-0
```

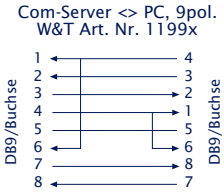
If you make a typing mistake during your entry you cannot correct it with Backspace. The procedure must be repeated.

If the entry was correct, the assigned parameters serve as the acknowledgement; otherwise the monitor shows the current IP address with the message *„FAIL“*. This procedure can be repeated as often as necessary.

To turn off BOOTP (DHCP) functionality directly, enter the expression „-0“ directly after the parameters (e.g. 192.168.1.2-0)

```
xxx                                                  ->  Web-Thermograph
IP no.+<ENTER>:                                      <-  Web-Thermograph
172.17.231.99,255.255.255.0,172.17.231.1-0           ->  Web-Thermograph
172.17.231.99,255.255.255.0,172.17.231.1-0           <-  Web-Thermograph
```

To connect to a terminal you need a null modem cable:



For a Web-Thermograph NTC/PT100 only pins 2, 3 and 5 are connected.

8.1.4 ...Using an RARP server (UNIX only)

Working with an RARP server activated under UNIX is based on entries in the configuraiton files */etc/ethers* and */etc/hosts*. First expand */etc/ethers* by one line with the assignment of the Ethernet address of the Web-Thermnograph to the desired IP address. In */etc/hosts* the link with an alias is then determined. Once you have connected the device in the network segment of the RARP server, you can use the network to assign the desired IP address to the device.

Example:

Your Web-Thermograph has MAC address EN=00C03D0012FF (sticker on the housing). You want to give it IP address 172.0.0.10 and the alias WT_1.

Entry in the file */etc/hosts:* 172.0.0.10 WT_1

Entry in the file */etc/ethers:* 00:C0:3D:00:12:FF WT_1

If the RARP daemon is not yet activated, you must start it now using the command *„rarpd -a“*.

8.2 Example for creating your own Web pages

You can freely configure the standard display pages of the device (user.htm, home.htm, log.htm). Special control elements let you insert tags into the page. The following shows an example for creating the „user.htm“ page.

Create an HTML file which must begin with the expression

```
<user.htm>          (or log.htm oder home.htm)
```

Then enter the HTML code.

You can display the following parameters on your pages:

```
<w&t_tags=t1>
```

Displays the current temperature (°C)

```
<w&t_tags=h1>
```

Displays the current relative humidity (%)

```
<w&t_tags=ah>
```

Displays the current relative humidity (g/m³)

```
<w&t_tags=rc>
```

Displays the „Rate of change“ over the last 5 minutes (°C)

```
<w&t_tags=pa>
```

Displays the current absolute air pressure (hPa)

```
<w&t_tags=pNN>
```

Displays the air pressure counted back to Mean Sea Level (hPa)

```
<w&t_tags=al>
```

Displays the configured altitude in which the device operates. (m)

<w&t_tags=time>

Inserts the current time of day.

<w&t_tags=steps>

Inserts a list box for selecting the times you want to display.

<w&t_tags=ok_button>

Inserts an „OK“ button which sends the selected parameters to the device.

<w&t_tags=session>

Inserts a hidden session control so that the use is not logged out of the device when leaving the page. The expression is only needed if you want to design your own button for sending. In that case insert this expression between *<form action>* and *</form>.*

Background color:

Background colors which vary according to the sensor state can be used for values shown in tables:

<w&t_tag=bct>

Describes a background color (BGColor) which varies with the alarm status of the sensor. If there is a limit violation, this color is red. Otherwise the tag does not describe an explicit color. This tag is needed for example to show limit violations in red in the log table. (°C)

<w&t_tag=bch>

Background color for the relative humidity value.

<w&t_tag=bcah>

Background color for the absolute humidity value.

<w&t_tag=bcrc>

Background color for the current „Rate of change“.

<w&t_tags=sensorx>

Inserts the name of sensor x (1: Temperature, 2: Humidity, 3: Air Pressure) into the page and contains a link for the complete sensor description.

<w&t_tags=device_name>

Inserts the assigned device name.

<w&t_tags=device_text>

Inserts the freely configurable descriptive text for the device.

<w&t_tags=location>

<w&t_tags=contact>

inserts the respective text elements, which are configured under **Config >> Device >> Text**.

<w&t_tags=reload_button>

Inserts a „Reload“ button which reloads the current page.

<w&t_tags=previous_button>

<w&t_tags=next_button>

Inserts a button for moving forward or backward in the measurement table.

The „Previous“ button and the „Next“ button only have a function in the „log.htm“ file.

<w&t_tags=logtable>

Inserts a table with the current measured values. This table can be navigated only on the „log-page“ using the „Next“ and „Previous“ buttons (see above). Only the current temperature values can be displayed on the two other pages (user.htm and home.htm).

Example for setting a background color in a table:

```
<tr>
    <td colspan="3" align="center">
    <table border="2">
        <tr>
            <th><w&t_tags=sensor1></th>
        </tr>
        <tr>
            <td <w&t_tags=bct>><w&t_tags=t1> &deg;C</td>
        </tr>
    </table></td>
</tr>
```

If there is a limit violation, the temperature is shown on a red background.

To specify the output format of the data, insert the following line in your document:

```
<form action="log.htm" method="POST" >
....
</form>
```

You can specify CSV output by using the expression

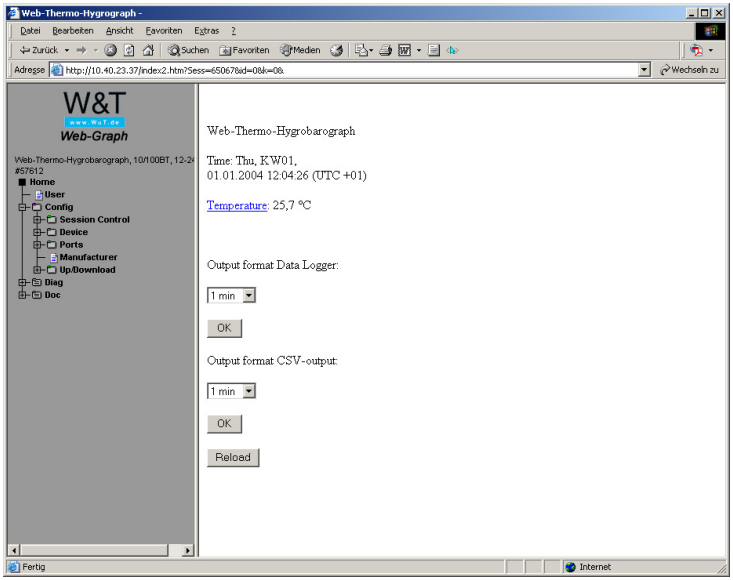
```
<form action="thermo.csv" method="POST" >
....
</form>
```

Resetting the device to its factory default values restores the original HTML pages.

Sample user.htm:

```
<user.htm>
<html>
<head>
<title>Untitled Document</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body bgcolor="#FFFFFF" text="#000000">
<p>Web-Thermo-Hygrobarograph</p>
<p>Time: <w&t_tags=time></p>
<p><w&t_tags=sensor1>: <w&t_tags=t1> °C</p>
<p> </p>

<form action="log.htm" method="POST">
    <p>Output format Data Logger:</p>
    <p><w&t_tags=steps></p>
    <p><w&t_tags=ok_button></p>
</form>
<form action="thermo.csv" method="POST">
    <p>Output format CSV-output:</p>
    <p><w&t_tags=steps></p>
    <p><w&t_tags=ok_button></p>
</form>

<form action="user.htm" method="GET">
    <p><w&t_tags=reload_button></p>
</form>
</body>
</html>
```

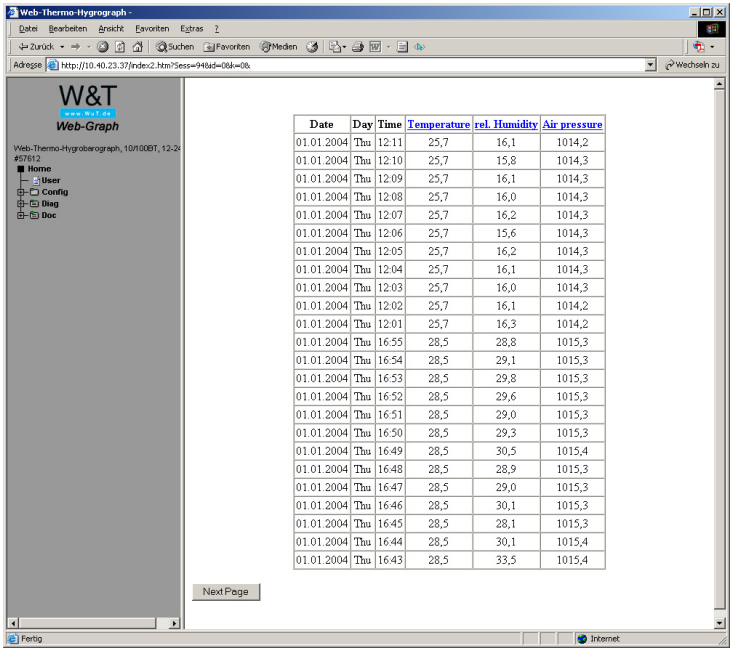
The Web-Thermo-Hygrobarograph displays this page in the Web browser as follows:



Sample log.htm:

```
<log.htm>
<html>
<head>
<title>Untitled Document</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body bgcolor="#FFFFFF" text="#000000">

<form action="log.htm" method="POST">
    <w&t_tags=previous_button>
</form>

<w&t_tags=logtable>

<form action="log.htm" method="POST">
    <w&t_tags=next_button>
</form>
</body>
</html>
```

The Web-Thermo-Hygrobarograph displays this page in the Web browser as follows:



Date	Day	Time	Temperature	rel. Humidity	Air pressure
01.01.2004	Thu	12:11	25,7	16,1	1014,2
01.01.2004	Thu	12:10	25,7	15,8	1014,3
01.01.2004	Thu	12:09	25,7	16,1	1014,3
01.01.2004	Thu	12:08	25,7	16,0	1014,3
01.01.2004	Thu	12:07	25,7	16,2	1014,3
01.01.2004	Thu	12:06	25,7	15,6	1014,3
01.01.2004	Thu	12:05	25,7	16,2	1014,3
01.01.2004	Thu	12:04	25,7	16,1	1014,3
01.01.2004	Thu	12:03	25,7	16,0	1014,3
01.01.2004	Thu	12:02	25,7	16,1	1014,2
01.01.2004	Thu	12:01	25,7	16,3	1014,2
01.01.2004	Thu	16:55	28,5	28,8	1015,3
01.01.2004	Thu	16:54	28,5	29,1	1015,3
01.01.2004	Thu	16:53	28,5	29,8	1015,3
01.01.2004	Thu	16:52	28,5	29,6	1015,3
01.01.2004	Thu	16:51	28,5	29,0	1015,3
01.01.2004	Thu	16:50	28,5	29,3	1015,3
01.01.2004	Thu	16:49	28,5	30,5	1015,4
01.01.2004	Thu	16:48	28,5	28,9	1015,3
01.01.2004	Thu	16:47	28,5	29,0	1015,3
01.01.2004	Thu	16:46	28,5	30,1	1015,3
01.01.2004	Thu	16:45	28,5	28,1	1015,3
01.01.2004	Thu	16:44	28,5	30,1	1015,4
01.01.2004	Thu	16:43	28,5	33,5	1015,4

8.3 Firmware Update

The Web-Thermo-Hygrobarograph firmware is under continuous development. The following section describes the procedure for uploading new firmware as it becomes available.

■ Where to I obtain the current firmware?

■ Firmware update over the network using Windows

8.3.1 Where do I obtain the current firmware?

The most up-to-date firmware including the necessary update tools and a revision history are published on our Web pages under the following address: *http://www.wut.de*

Before downloading, write down the 50digit type number for the Web-Thermo-Hygrobarograph found on the part label. From the homepage you go to the product overview, which is sorted by article number and from which you can get directly to the data sheet for your unit. From there follow the link to the current firmware version.

8.3.2 Firmware-Update over the network using Windows

The prerequisite is a PC running under Windows 9x/NT/2000/XP with a network connection and activated TCP/IP stack. For the update process you will need twofiles whyich, as already described, can be downloaded from the homepage *http://www.wut.de.*

· The executable update tool for sending the firmware to the Web-Thermo-Hygrobarograph

· The file with the new firmware which you want to send to the Web-Thermo-Hygrobarograph

No special preparation of the Web-Thermo-Hygrobarograph is necessary to perform the firmware update.

The *WuTility* used for the update detects all the WuT devices in your network and is essentially self-explanatory. If you do have any questions or if anything is unclear, please use the associated documentation or our online help.

Never intentionally interrupt the update process by disconnecting the supply voltage or pressing the Reset button. After an incomplete update the Web-Graph Thermo-Hygrometer will be incapable of functioning.

Never mix files having different version numbers in the file name. This will result in malfunction of the device.

The Web-Thermo-Hygrobarograph automatically recognizes when transmission of the new firmware is complete and automatically performs a reset.

8.3.3 LED indicators

- **Power-LED:** Indicates presence of supply voltage. If the LED does not come on, please check that the power supply is properly connected.
- **Status-LED:** Flashes whenever there is network activity of the Web-Thermo-Hygrometer. Periodic flashing indicates that the unit is ready.
- **Error-LED:** The Error LED uses various flash codes to indicate error conditions on the device or network port.

  1x flashing of the Error-LED = Check network connection. The Web-Thermo-Hygrograph is not receiving a link pulse from a hub or switch. Check the cable or the hub/switch port.

  2x bzw. 3x flashing of theError-LED = Perform a reset by interrrupting power. If the error cannot be cleared, reset the device to its factory defaults. Since this resets all network settings, you should first write down the existing network settings.

  ```
  Config -> Session Control -> LogOut -> Restore Defaults
  ```

  After a reset the device is restored to its factory defaults. Reconfigure your network settings.

Power-LED +Status-LED +Error-LED an = Self-test error

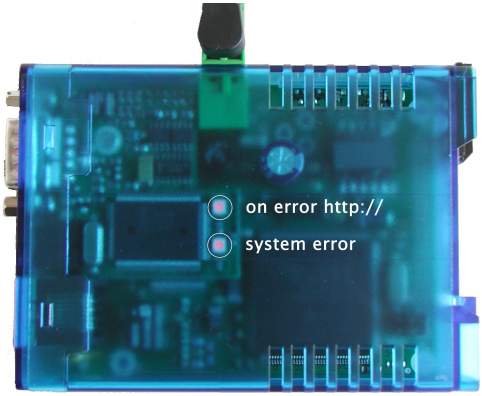
The self-test which is performed after every start or reset of the Web-Thermo-Hygrobarograph could not be correctly finished, for example due to an incomplete update of the firmware. When in this state the device is no longer operational. Please return the unit for service.

Auxiliary LEDs (internal

- **on error http://xxx.xxx.xxx.xxx/diag -LED:** Indicates internal configuration errors. For troubleshooting, please open the page http://xxx.xxx.xxx.xxx/diag in the device.

- **system error:** Serious hardware error. Attempt to start the device up again by interrupting supply voltage. If the condition persists, please return the unit for inspection.

If the Web-Thermo-Hygrobarograph has no IP address or Address 0.0.0.0, the on error and system error LEDs remain on! The system error LED flashes 3x after a brief time. The LEDs do not turn off until an IP address has been assigned.



8.4 Emergency access

The serial connection (DTE) of the device provides emergency access. This is activated as follows:

Use a serial cable (null modem cable: pins 2, 3 5 only) to connect the unit to a PC and start a serial terminal program. Make the program settings as follows:

9600,8,N,1,no handshake

Connect the device to the network. Interrupt the supply voltage. Power on the device again and press the following letters in your keyboard 3x in the first three seconds for the individual accesses:

3x „u“ Opens the update port. You can now load a firmware update.

3x „f“ Resets the device to the factory defaults. All previous configuration settings (including IP address) are lost.

3x „p“ Deletes all assigned passwords.

For confirmation the **system error** and the **on error http** LEDs flash several times one after the other.

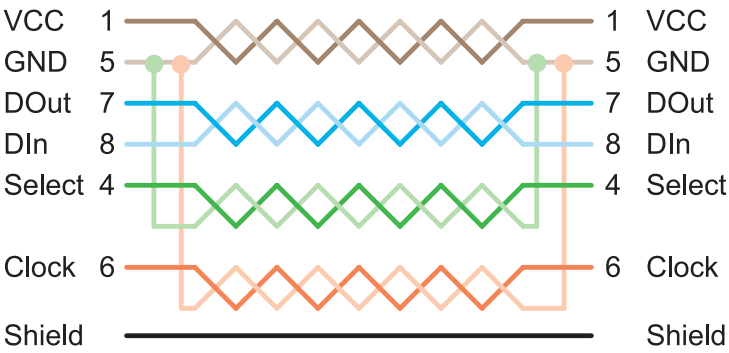
3x „x“ (Directly after pressing the Reset button, before the audible tone). Used for assigning/changing the IP address. When prompted, enter the desired IP address.

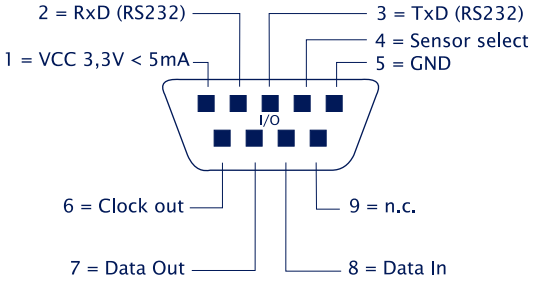
8.5 Extend the sensor cable

It is possible to extend the sensor cable to a length of 20m (2m provided cable + 18m extension).

For the combination we recommend DB9-connectors.

We recommend the use of a shielded data cable with at least Cat.5 specification or better and the following pinout:



8.6 Technical Data

Prod. No.:	**57612, 57613**
Thermo-Hygro Probe:	I2C connection
Air pressure probe:	SPI connection
Network:	10/100BaseT autosensing
Supply voltage:	57612: 12-24V AC / DC using screw terminal 57613: Power-over-Ethernet (PoE) or via screw terminal with DC 24V .. 48V (+/-10%) or AC 18Veff .. 30Veff (+/-10%)
Measuring unit	
Measuring range:	-40°C...85°C, 0..100% rF, 10-1100 hPa
Resolution:	1/10 °C, 1/10% rF, 0.1 hPa
Measuring error:	±2% Kelvin, ±2.5% abs ±2% rel.rF, ± 2hPa
Storage frequency:	1, 5, 15, 60 min
Memory depth (832kB):	min. 10 weeks, max. 8 years
Other data	
Galvanic isolation:	Measurement inputs to network: min. 500V
E-mail function:	Mail for sending alarms or as reporting function
Supply voltage:	DC 12V .. 48V (+/-10%) AC 9Veff (-5%) - 24Veff (+5%)
Current consumption:	AVG: 200mA @12VDC, 100mA @24VDC, 100mA @20VAC Max: 240mA @12VDC PoE Class 1 (0.44 - 3.84W)
Configuration interface:	RS232 serial port, 9600 baud, 8 data bits, 1 stop bit, no parity
Housing:	Plastic compact housing, 105x75x22mm
Weight:	approx. 200g
Ambient storage temperature:	-40..+70°C
Ambient operating temperature:	0 .. +60°C